

**BEFORE
THE
LOST ARTS**

CRAFTS

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Before the lost arts and



BEFORE THE LOST ARTS

AND OTHER LECTURES

BY

Rev. WILBUR F. CRAFTS, Ph.D.

AUTHOR OF

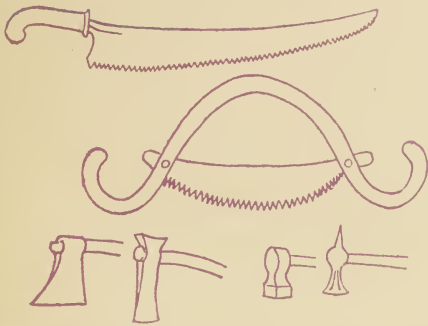
"The Sabbath for Man," "Practical Christian Sociology,"
"Successful Men of To-day," "Reading the Bible with Relish," etc., etc.

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I.

BEFORE THE LOST ARTS.

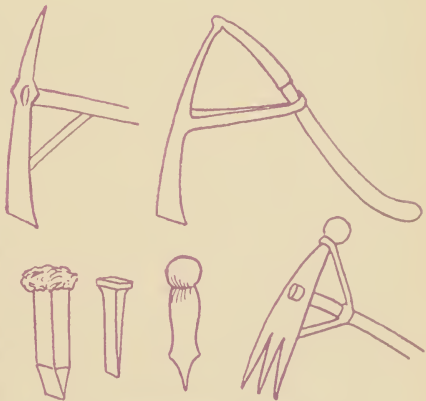


SAWS, HAMMERS AND AXES OF ANCIENT EGYP.

only reinventions of "lost arts" that were in use thousands of years ago.

The cuts here given, representing tools in use about 3500 years ago, are from *The Literary Digest* of February 1, 1896, which reprinted them, with explanation and discussion, from *Industries and Iron*, London, December 13, 1895. Those who wish to know more of the "lost arts" should consult also cyclopedias and learned works on discoveries in Pompeii, Troy, Mycenæ, Cyprus, etc. For the purposes of this lecture, only a passing reference is necessary.

§ 1. MODERN explorations in the ruins of ancient cities have shown that many tools and implements that had been supposed to belong exclusively to modern times are in reality



AXES, CHISELS AND HOP.

These ancient implements, which some of us have seen, and which have been certified to all others by unquestioned testimony, are to us all satisfactory proof that in the times and places to which they belong there existed minds like ours, intelligent and inventive.

But other explorations have proved the existence of more numerous and more wonderful tools and even machines at a much more remote period.

It is well known that the beginnings of science were in the cells of the alchemists and astrologers. The most ancient implements and machines referred to are found in connection with more ancient cells, where they were wrought centuries before Venice worked in glass or Egypt built her pyramids.

The following is a partial list of these most ancient implements and machines and their products: needles, lances, scissors, scissors-lances, spears, picks, forks, hooks, swords, trowels, spades, self-sharpening chisels, pincers, forceps, augers, spokeshaves, files, common saws, circular saws, band saws, bellows, pulleys, levers of the three kinds, hair brushes and combs, syringes, anchors, grapnels, goblets, thread, elastic fish lines, cables, nets, burlap, lace, paper, self-adjusting, self-cleansing opera glasses, lenses, microscopes, telescopes, photographic cameras, electric weapons, electric lights, beveled trap doors, folding doors, dovetailed boards, slate and tile roofs, grated windows, suction pumps, pot furnaces, radiators, covered heating pipes, filters, life-boats (made with compartments like modern ships, which are also air chambers), balloons, air guns, drums, bugles, bells, whistles, trombones, flageolets, taborets, clarionets, trumpets, violins, pipe organs, self-dressing millstones, roller skates, submarine

cement, glue, hollow pillars (so made to combine lightness and strength), buttresses, girders, arches, domes, telegraph lines and telephones.

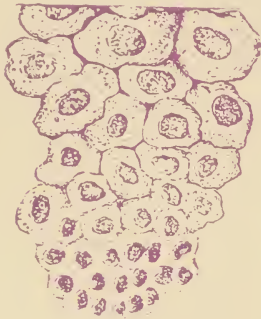
I perceive in your faces two kinds of expression, which remind me of an incident. A Western man having told a story of even more than the usual Western dimensions, one of his hearers showed no amazement. The narrator turned on him sharply and said: "You don't seem surprised at that?" "No," said his calm auditor, "I am a liar myself." But when I shall have convinced this audience, as I have the many audiences to which this lecture has been delivered all over the United States and Canada and Great Britain, that I have not spoken in a Pickwickian, not even in a poetical sense, in giving you this partial list of ancient tools and machines, but rather have spoken historically and scientifically, then, *by the same logic which you accepted a few moments since, these most ancient tools and machines will prove that at the times and places when and where they existed there was mind at work, intelligent and inventive, like ours in kind, however different in degree.*

These implements and machines all existed before man made his first invention. The ancient "cells" in connection with which they are found are those which so wonderfully underlie all animal and vegetable life, sometimes so minute that half a million of them may be found in a single square inch of flesh.

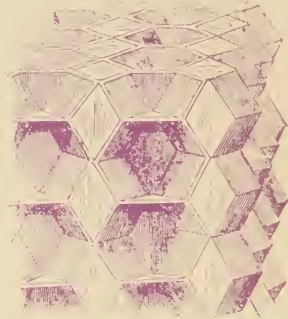
The vegetable cells in the picture (see next page), some of them cut in two, some of them closed as in nature, remind us, as do many forms in the yet lower mineral kingdom, that "God geometrizes." But the less beautiful cells of the animal kingdom are really more wonderful. In this magnified view of a

living frog's tongue we see the living bioplasm, that spins and weaves all animal bodies, in the cells of non-living matter where it works its wonders.

These minute cells have recently proved mighty fortresses of faith. Dr. Burdon Sanderson, in his address as President of the British Association for



CELLS IN FROG'S TONGUE.
(From Cook's Biology.)



VEGETABLE CELLS.
(From Gray's Botany.)

the Advancement of Science, in 1893, declared, with the manifest approval of that foremost of scientific bodies, that the materialistic theory of the universe had broken down in the presence of these microscopic cells, each of which manifests a "specific energy" inconsistent with any mechanical theory of causation. His successors in that premiership of science, Lord Salisbury and Sir Douglass Galton, each repeated, with the increasing approval of the Association, the declaration that materialism has utterly failed to make out its case. The recent return to faith of Romanes,² the very champion of material-

² The story of the conversion of George John Romanes, as given in his posthumous book, "Thoughts on Religion" (The Open Court

istic evolution, whom Darwin declared to be the most intellectual of living men, is another sign that science, as it passes the sophomoric period, is finding that cells and cosmos alike proclaim an intelligent Cause.

That this reaction of scientific men toward theism and Christianity is not confined to England but is general is declared by M. Brunetière in the *Revue des Deux Mondes*,³ which *The Outlook* characterizes as "the foremost organ of literary opinion in the world." There have been, he says, in effect, three different attitudes taken by scientific men toward re-

Publishing Co., Chicago, Ill., \$1.25) and in *The Bibliotheca Sacra*, January, 1896, p. 68 (Oberlin, O., 75 cents), is likely to be of great benefit to those who are perplexed with doubts suggested by science. On p. 165 of "Thoughts on Religion" he says of his changed views: "I took it for granted that Christianity was played out, and never considered it at all as having any rational bearing on the question of theism. And, though this was doubtless inexcusable, I still think that the rational standing of Christianity has materially improved since then. For then it seemed that Christianity was destined to succumb as a rational system before the double assault of Darwin from without and the negative school of criticism from within. Not only the book of organic nature, but likewise its own sacred documents, seemed to be declaring against it. But now all this has been very materially changed. We have all more or less grown to see that Darwinism is like Copernicanism, etc., in this respect; while the outcome of the great textual battle is impartially considered a signal victory for Christianity."

³ By Professor N. S. Shaler, of Harvard University, also *Homiletic Review*, November, 1895, and by President Schurman of Cornell University. The latter recently said in the *Philosophical Review*: "Does not the light already shine for all who have eyes to see? The conception of God as spiritual and not mechanical; as immanent, not external; as working by law, not by caprice, and with steady, infinite patience, not by catastrophic outbursts, as adumbrated in nature and revealed in the moral and spiritual qualities of man, who is the goal of evolution and the epitome and abridgment of existence: is not this conception, in combination with the idea of the divine Fatherhood (which is the essence of Christianity), taking possession of the best spirits of the modern world and dislodging the agnosticism by which it was preceded and by which, in a sense, it was originated?" See also President Schurman's since published book, "Agnosticism and Religion" (Scribners, New York).

ligion. In the last century the attitude of most scientists toward religion was one of contempt. Faith of all kinds was treated as a relic of the superstitions of the childhood of the race, and religious phenomena of all kinds were quietly put aside as unworthy of investigation. This attitude was succeeded by that of the middle years of the present century, when scientific activity was at its height, and when the expectations of discovery and revelation from science were almost boundless. At that time, M. Brunetière declares, religion was no longer despised, but it was treated simply as a phase in the history of the development of humanity, worthy of careful study and of immense influence in the past, but permanently superseded by science. This attitude has been forsaken, according to this writer, for another attitude, which he declares will be that of the scientific men of the next century—an attitude in which the claims of science are very much moderated, and the claims of religion very much more heartily recognized, with a growing perception that the apparent antagonism between the two has been superficial rather than real, and that there is in religion a permanent element, the expression of which science may modify, but which it cannot destroy.

In this rout of materialism, as I have said, these microscopic cells have had a decisive part. They are not only the fortresses but also the workshops and laboratories of *the invisible Wisdom, of the original Mind, who manifests in his works, design, order and progress, as does the human mind, only the Divine Mind, being perfect in knowledge and skill, used in the very beginning many of the same mechanical devices that man, the son of God, thinking God's thoughts after him, has*

come to use less perfectly after six thousand years of experiment and study.

For instance, take that simplest of all mechanical appliances, a point. A Boston lecturer magnified the point of the finest cambric needle, and so made it appear on his stereopticon screen like a stub pen, four inches across the end. But a bee sting equally magnified retained its point, and the lecturer said, "Man cannot make a point, but God can." Man is also far behind in the making of fine thread. His hand is not able to make it as fine as his own mind requires.

For the micrometer, a metal framework, crossed with threads, which is placed in the eyepiece of telescopes to measure astronomical distances, man has tried in vain to furnish a wire or thread of



requisite fineness, and so has had to use the thread that the Creator makes in the spider's mill. The finest wires man's science has enabled him to make for this purpose are shown, magnified, in figures 1 (platinum) and 2 (German silver), while figure 3 shows the much finer spider thread. In the Observatory clock at Cincinnati, a spider thread was used (all other wires and threads being too heavy) to carry an automatic telegram of every tick. Attached to the pendulum at one end, it was so delicate as not in the least to retard the clock, and yet this natural telegraph wire was strong enough to serve two years, with no sign

of wear, being broken at that time because of changes to be made in the clock. These fine threads for scientific purposes are spun "to order" by the male spider, whose thread is finer than his mate's. A pencil is placed against the thread gland of the spider, and he is then lifted up. He at once begins to spin, falling from the pencil to which he has made fast the thread like a fire-escape rope. The thread is then wound round about the pencil as if it were a spool. Fine as this thread is, it is a cable woven of a thousand finer threads.¹

Another illustration of the fact that the Divine Mind, though like ours, is greater, not only in the quantity but also in the quality of his inventions, is the natural opera glass of the eyes. There are two eyes rather than one for the same reasons, manifestly, as that there are two eye pieces in opera glasses, stereoscopes, and other double glasses, namely, to give completer and more correct vision, especially with reference to solidity. But while the double glasses of man's making have to be washed, and also adjusted by wheels to near and remote objects and to different degrees of light, our natural opera glasses adjust themselves instantly to varying distances, and more slowly to a change from light to comparative darkness. When one passes from the sunblaze of noon into a half-darkened room, he can see nothing at first, but presently in a slight sense of pain he can almost feel the turning of the wheels as the self-adjusting opera glass of his eyes adapts itself to the partial darkness. This self-adjustment in the case of the cat's eyes is yet more perfect. In our army

¹ Gosse's "Evenings at the Microscope" (Appleton's, p. 246).

there was a soldier known as "the natural picket" because he had a cat's eye which could see on the darkest nights, for which his share of picket duty was therefore reserved. Our natural opera glass is also self-adjusting in regard to position, having pulleys by which it turns, without other help than the will, up or down, right or left. The opera glass also washes itself from the tear ducts, and puts itself in its case by closing the lids when its "sight-seeing" is over for the time. In the insect-eating birds the eyes form a double microscope, a new thing in art but old in nature, and in the case of vultures the eyes form a double telescope, which art has not yet copied.

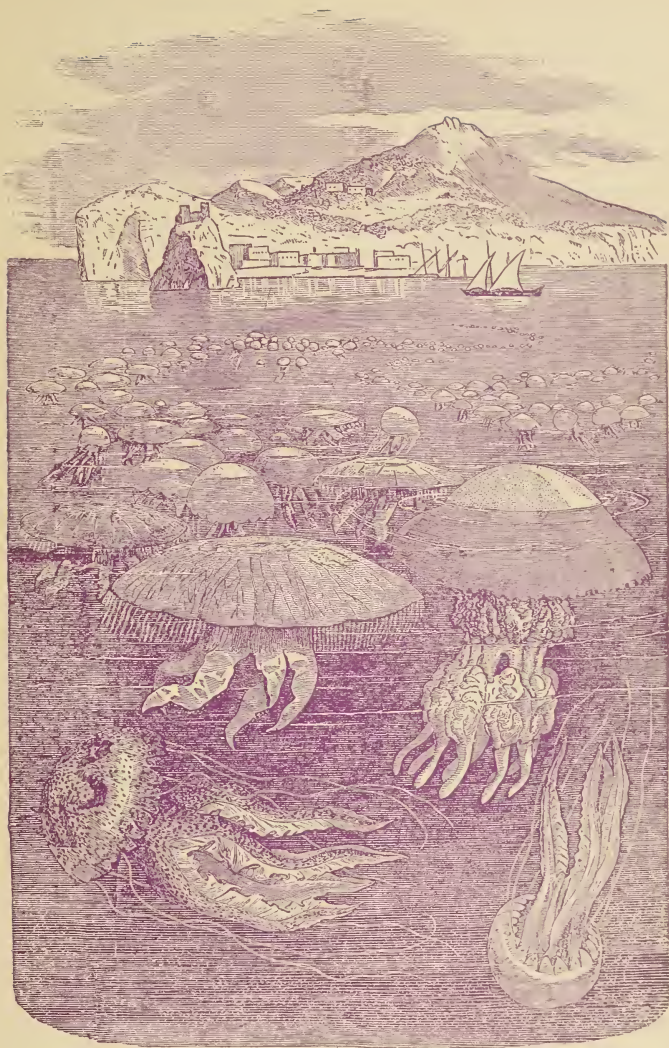
That divine machines, though like man's, are more perfect will appear all through our study; but I will name here, at the threshold of our subject, one more example of this superiority, namely, the human hand. It is at once a hammer, a vice, a forceps, a hook, a spoon, a paddle, a club; it also includes nearly all the tools a sculptor requires in modeling; and besides being a whole chest of tools, it is a complete signal service for expressing the feeling of the heart and the thought of the brain. Man's hand never has been skillful enough to make another machine as wonderful as itself in the variety of its powers and the compactness of their arrangement.

Nature shows Mind, Mind like ours, but greater; as a father's skill excels that of a half-developed child.

That a Mind like ours but infinitely greater created and sustains the visible world is also strikingly shown in the fact that not infrequently the machinery of nature has been directly and consciously copied by human machinists.

One of the most valuable lances used in surgery, the scissors-lance, was copied from the microscopic lance of the black fly of the Adirondacks. The scissors-lance of the surgeon pierces the skin with the scissors closed, and then, by a remarkable mechanical contrivance, the scissors are opened internally to cut away a tumor or some other intrusive matter. No one would say the copy did not represent a designing mind. What of the original? It was manifestly made for the purpose of supplying the insect with its food. Having pierced the skin, making but a tiny puncture, the scissors are opened to increase the flow of blood, which, because the external cut is very small, cannot escape, and then a suction pump draws it up, after which a brush resembling those used for kerosene lamp chimneys is used to clean the lance for future use.

The points of our modern augers were copied from the wonderful head of the locust borer, a little worm about an inch long and so soft, except its tiny head, that a child could crush it in its fingers, and yet so capable of boring the hardest wood that the one which I have was taken from a hickory log, in splitting which two strong men broke an iron wedge. Some years ago a man of inventive turn of mind be-thought him that this living auger might teach man how to improve boring tools, and, having examined microscopically his little horns, transferred them to the bits we now use. Boats have been built from the days of canoes on the pattern of ducks and fish. The swan is a beautiful propeller yacht with a lofty pilot house at the bow. Pot furnaces were copied from certain eminences in the alimentary canal. So the ship-worm, which bores by means of a funnel-



THE SHINING COMETS OF THE SEA.

(From *Christian Work*, April 26, 1894. See also same, December 6, 1894.)

like projection on its head and enamels the sides of his tunnels, gave the famous engineer Brunel the successful method of boring and the idea of putting cast-iron linings into the treacherous tunnels he cut through the sand of the Thames, which had previously defeated him again and again. The Eddy-stone Lighthouse, which has stood the storms of a century, was patterned from a tree trunk—is, indeed, an oak of granite. And when architects had failed to present a safe plan for the Crystal Palace of London, a gardener, the now famous Paxton, copied the architecture of the Victoria Regia leaf. The band stands at the Crystal Palace and at Coney Island in the United States are copied from the human mouth, in recognition that God's sounding board is the best. The living phosphorescent lights of the sea, jellyfish, starfish, and luminous sharks, use an illuminant that man has not yet copied, while electric fish show that God finds no insuperable problem in storage electricity. Some of these lamp fish have been used by sailors for lamps. In one case a group of six pyrosomæ were placed in a globe of glass and used as a cabin chandelier. Some luminous plants and insects have also been used as lamps. Professor D'Arsonval, of the College of France, according to the *Scientific American*, has lighted small electric lamps by applying them to the torpedo fish, which give out a shock of from twenty to one hundred and twenty volts—a power usually employed for killing or paralyzing their prey. In one case the shock was so strong that it carbonized the lamps.

That many more machines in nature might be copied with profit to inventors and the public is the chief burden of a book called "Nature's Teach-

ings," by Rev. J. E. Wood,⁵ published since I began to deliver this lecture. (It discusses the machines of nature from a standpoint far different from mine ; but from it I have derived many facts not otherwheres found, besides many pictures of objects that I had discussed previous to its publication without pictorial aids.)

As we turn from the aspect of the subject which we have been discussing, it is pertinent to ask, If the copying of machines from nature shows intelligence, does not their origination evidence it still more ?

The main argument of this lecture was suggested by Wendell Phillips's lecture on "The Lost Arts," which I heard in 1870. As he told of the alleged arts of antiquity (now known to have been greatly overestimated by him) the thought occurred to me that nature's machines, more numerous and more wonderful, were much older, and that if the "lost arts" prove intelligence in the age to which they belong, the tools of nature that existed before the lost arts prove yet more clearly the greater intelligence of the world's Author, and man's kinship to him.⁶

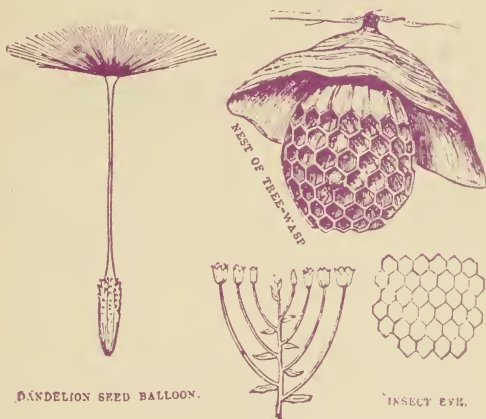
Let us deepen our sense of the reality of a personal God and our sonship by a rapid survey of many machines which God and man have each invented separately with like purpose.

§ 2. Former ages have seen the greatness of the

⁵ Daldy, Isbister & Co., 56 Ludgate Hill, London, England.

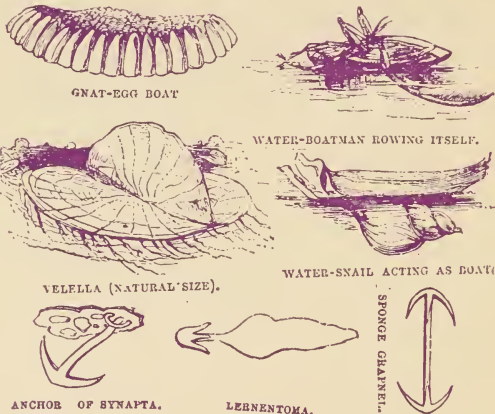
⁶ Mr. L. A. Maynard, of *Christian Work* (March 29, 1894), in an article on "Children of the King," says: "I think there is a tendency among those who preach to us from the pulpit and from the printed page to dwell too much upon the weakness and littleness of men. . . . As Christ taught the virtues of humility and meekness, that man can do nothing of himself, . . . so also he taught that men are the sons of God."

Creator chiefly in the infinitely great—the sea and sky. But the microscope's revelation of God is even more wonderful. Mastery of details is the rarest mastery. Daniel Webster, being asked for the best evidence of greatness shown by Sir Robert Peel, quoted from one of his addresses, as Chancellor of the Exchequer, these words, "Now we come to the onion seed." That he should have taken ac-



count of such small products in seeking to prevent taxes from being burdensome anywhere was counted a rare mark of genius. So the greatness of God appears in nothing so marvelous as in his mastery of the minute and multitudinous details of his kingdom. See how he equips the dandelion seed, humbler than the onion seed, with a balloon and grappling hooks. Beside it behold what botanists call a corymb, but what I choose to call the golden candlestick flower, proclaiming as its Author a Mind loving beauty and symmetry as it holds aloft its floral incense lamps in

his praise. Is there no Mind back of the 70,000 perfect lenses in the eye of the tortoise-shell beetle, or the 10,000 in the eye of the common fly, or the hexagonal cells of the wasp's beautiful paper palace? Making paper from wood pulp is a new art among men, but old as the world among wasps. The Japanese have learned in modern times the value of paper houses. The wasps were taught this ages ago. On the walls of African huts one may see the

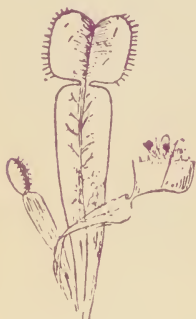


paper tents that spiders have woven and set up—paper made of their own threads, first one square piece, then a narrow strip to hold it down on all sides, fastened with glue from their own bodies. Under this the eggs are placed, and on it the spider keeps guard against foes. Speaking of threads, we ought to mention the cables by which the water snail and pinna shell anchor themselves—the latter sometimes woven into garments.

One of the favorite specimens of microscopists is

the synapta, a tiny creature of the sea, which has four anchors in place of hands and feet. As in the story of Paul's shipwreck, when danger threatens he "casts four anchors out of the ship and waits for the day." And the anchors are almost exactly like those used in the voyage of Paul, as we see them on ancient Roman coins. The lernentoma, a parasite, has a grapnel head with which he grapples, pirate fashion, the sprat on which he is to feed. There are sponges also that are live grāpnels. The velella, a living raft, carries a living sail. The violet snail carries a pocket raft which it inflates with air, and so makes a life raft that cannot sink and by which it is transported. The water-snail and water-boatman each carry a boat in their journeys, like an Adirondack tourist, the former keeping his boat tucked under his armor when not in use, the other wearing his boat, keel upward, as a coat when not in the water. The water-snail depends on the wind, but the swifter water-boatman has a set of arms that are oars with a wonderful power to "feather" by contraction, as do natural oars in the fins of fishes, the tails of lobsters, and the webbed feet of aquatic fowls also. Here it will be suitable to mention that the tails of fish and of sea animals are at once rudders and propellers, like sculling oars, the fins being in various cases, oars, keels, and centerboards. Older than any human lifeboat is the eggboat of the gnat, which no waves can sink because of its air-tight compartments, consisting of attached egg-shells, each with a trap door to let the gnat, when hatched, into water. The mother gnat protects her young as intelligently as the mother of Moses, who made water-tight the wicker boat in which she laid him by the

river's brink. Natural trap doors are found not only in gnat eggs, but also in beveled form at the entrance to the trap-door spider's hole. They are also



Venus' Fly-Trap.



DOOR OF TRAP-DOOR SPIDER.

found in the camel's nose, to protect him against the desert sands, and in one form of the Venus fly-traps. These last seem to be electric traps. (Surely here is something to be copied.) Nothing slower than lightning would be adequate to catch a fly. When a fly's foot touches the lining of the dungeon tower the trap door falls and the fly is suffocated. So in the open trap, the touch of a fly's foot brings the trap together and the fly is killed, and in some sense feeds the plant, apparently. As to the camel, the ship of the desert, he is in every part built for long desert voyages as surely as our common ships for the sea—his nose, his feet, his hump, his stomach, in the last of which are water barrels of leather for his long voyage through the sand. As well say the barrels on ship-board are "a fortuitous course of atoms" as to say there was no intelligent purpose in

the camel's unusual water supply.

So-called "blades" of grass are really wedges of remarkable power when below ground, and in some

cases sword-blades when above it. (Over.) We do not yet see the purpose of the wheels of the chirodota, which are at least forms of beauty. But the filters or sieves of a duck's beak and a whale's mouth are each manifestly designed to sift out coarse substances from the water, whose minute life is used by these

creatures for food. We have all seen a fly at his toilet, but not all have seen the two brushes here pictured with which the task is done. The toucan daintily combs himself with his notched beak, an effective bone comb. The spider has a softer comb. The glow-worm larva's brush strikingly resembles a shaving brush.



Venus's Fly-Trap.

Bees, wasps, and hornets have each four wings. The two on each side are hooked together as one, with hooks here pictured, when the insect is about to fly. There is scarcely a form of hook that is not found in some plant or insect or larger creature. A wonderful chest of tools the

mosquito carries in his mouth—two lances, two spears, two saws and a suction pump. The wasp and bee carry a smaller assortment of tools; and it is claimed for the bee that his sting is both sword and trowel; that while sometimes used for defense, it is commonly used for varnishing and sealing his honey cells and injecting formic acid into the honey. The common saw-fly carries a saw in its mouth with which it saws a crease in some soft branch as a nest for its eggs. More wonderful is the sawyer beetle, a living circular saw, with teeth on the inside, which swings itself round and round, like a gymnast on a trapeze, in order to get at the juices of the tree by sawing into the wood. Still more wonderful is the self-renewing band saw of molluscs, some of which—in the whelk, for instance—have 27,000 teeth. When some of the teeth are worn out they are rolled in to grow again and a fresh section of the band is rolled out for service. Another natural carpenter is the hoopshave bee, which shaves the soft down from twigs by a double plane on both sides the mouth, and uses the down thus obtained as a lin-crusta-walton paper for its home. The mole vigorously wields a spade. The woodpecker uses not his head only but his whole body as a pick. It will be appropriate to name here the natural file, equisetum, known as the "Dutch rush," which is said to surpass, for certain purposes, all manufactured files and sandpapers. The beaver's tooth chisel excels in one respect all manufactured chisels, namely, in that it is self-dressing and self-renewing. The front being hard enamel and the back a softer bone, the latter wears out faster than the former, so keeping up the edge, and the growth of the tooth makes the chisel

MOSQUITO LANCER.



BEE-STING.



WASP-STING.



CICHLID, OR ARCHER-FISH.



EQUESTRIAN FILE.



SAW OF COMMON SAW-FLY.



SAWYER-BEETLE.



BEAVER CHISEL.



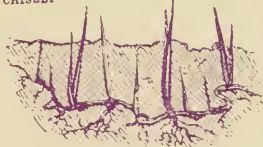
COMB BEAK OF TOUCAN.



SWORD-GRASS.



WING-HOOKS OF INSECT.



GRASS-BLADES.



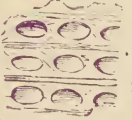
HAIR-BRUSH FOOT OF FLY.



BRUSH OF GLOW-WORM LARVA.



DUCK'S BEAK FILTER.



STOMACH OF CAMEL.



CHIRODOTA.

(The objects here described are more fully discussed, with others also, in "Evenings at the Microscope," by Philip Henry Gosse [Appleton's], and in "Nature's Teachings," already referred to.)

last a lifetime. Each of the elephant's molars is a self-dressing millstone, with three layers of bone, hard, harder, hardest, which, wearing out slow, slower, slowest, keep the ridges ever dressed for grinding. All molars are millstones, as the word implies.

Man has only recently invented submarine cement; but in nature it is as old as the terebella. The respirator used by certain mechanics to protect the mouth from metal dust was anticipated in the strong protection of the air tubes of flies. Portable electric lights, fed by the electricity in the body, which are for man a possible future invention, are anticipated in fireflies and glow-worms. And the electric weapons of future warfare are foretokened in the torpedo fish and electric eel which disable their game by electric shocks. Almost every form of piercing weapon has been used for defense and for the hunt in nature. The so-called sawfish is as much a swordfish as the one who bears the latter name. Both use their swords to kill the game they feed on and for self-defense. Armor is anticipated in shell fish and the tough-skinned animals. The archer fish has in its body and mouth an air gun by which, with a skill no man ever equaled, it shoots a fly with a drop of water for a bullet. Somewhat similar in shape, but with a long syringe mouth, is the bellows fish, which draws water into its capacious body to absorb its minute forms of life, and then expels the water by a motion like that of a bellows. Yet more interesting is the squid, which ought to be called the rocket fish, since its progress is caused by reaction through the swift expulsion, not of fire, but of water. In capacious bags which

hang like wings at its sides it gathers its "water power." The water is swiftly pressed out on both sides of its head, and away it shoots, rear end first. So swift is the expulsion of the water that the head would be in danger were it not that on the sides of the head are little buttons and on the water-bags button-holes, by which, when the cataract power is about to work, the squid buttons on his head and all goes well. Here certainly is an invention that ought to be copied to prevent rockety people in trying moments from "losing their heads." The angler fish has a live fish-pole and line and bait on his upper lip with which he successfully angles for fish. The nemertes is a living elastic fish-line that lies on the beach as if a dead string until touched by the game it seeks, which it "plays" like a trout-fisher for a while and then devours. As to nets, besides the spider's stationary net that is rendered more effective by putting glue on the cross threads to hold the game, the argus statfish and barnacle both use cast nets to entangle their prey. The lace named in my list is the beautiful lace leaf of the Orient, and the burlap is the overcoat of the cocoanut tree. Its warp and woof are clearly seen.

There are few, if any, musical instruments that are not in their main principle as old as nature. The funeral of cock robin, had the story been written in our day, would have been carried out by the birds themselves, bell ringing, funeral orchestra and all. In the scientific revision of the story the partridge beats the drum for the solemn march; the bell bird tolls the bell; larks, canaries, and surviving robins play the clarionet; the golden robin, the bugle; the blue bird, the flageolet; the hair bird, the octave

flute ; the crane and trumpeter, the trumpet ; the swan, the trombone. If taboret is needed, the katydid is at hand, and the locust with the violin.

The hollow bones of birds are, first, a bone balloon, that is filled at will with warm air from the lungs to help them fly ; and, second, organ pipes for music ; and, third, hollow pillars, which give greatest strength with least weight, as men have only learned of late. Which reminds me that as pillars and iron yards for ships are strengthened by horizontal ribs, so stalks of wheat and corn and porcupine quills have always been thus strengthened. That double walls with air space between are less affected by external heat and cold is a new principle in human architecture ; but the silk worms had been so taught divinely when they first built their cocoons. Slated and tiled roofs are found in nature, for instance, in butterfly's wings. And the little caddis in pupa state protects its grave with grated windows. The emperor moth's cocoon is protected by the reverse of the device that is found in crab and lobster pots and certain mouse traps, the cone of spines easily entered one way, but impassable spears against return. As the lobster can get in but not out, the moth, by an opposite arrangement, provides that the cocoon can in due time get out while nothing can get in. The entrances to birds' nests are often like those of the Esquimaux, which, to secure their homes against polar bears, make a long narrow entrance through which they themselves must crawl, a Thermopylac pass easily defended against foes.

In the bones of our bodies are found arches, buttresses, girders ; also levers of the three kinds in neck, foot, and arm ; while the valves of the heart,

as the name implies, are folding doors. The dome, the strongest form of roof, is found in the human skull, which is built on the same architectural principle as St. Peter's or the Capitol, and as sure to have great questions of Church and State agitated beneath it. The bones of the skull are dovetailed, and protected between and below by rubber cushions of cartilage. The hair of our heads, though not "numbered" on the end of each one, as a certain colored preacher declared would be seen to be the case on microscopic examination, is marked yet more wonderfully at the other end. Each hair is sheathed like an officer's sword and provided with two sacs or bottles of hair oil, the only kind that ever should be used. In an average head of hair there are 150,000 such sheaths.

And the eye, besides being an opera glass, is a kodak. Cut from white paper the figure of a bird and mark an X upon it to fix your eye. Lay it on your black coat or black dress and look intently at it while you count fifty, so making your eye a camera. Then look up to the white wall, and presently you will see the "negative" of the bird in black, seemingly on the wall, but really on your eye, where it has been photographed, and where it will remain as long as your portrait would remain on the plate if chemicals were not used to "fix" it.

The telephone of nature is the ear. The external ear is the speaking tube. The first drum corresponds to the vibrating carbon. Three bones constitute the wire which carries the vibrations to the second drum, the listening tube, where the brain receives the message.

Most wonderful of all the machinery of the human

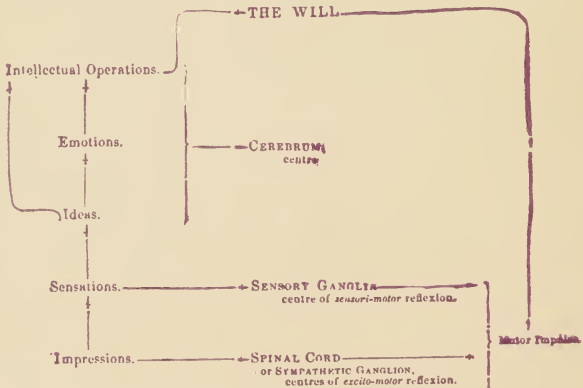
head is the telegraph office it contains. The parts of the brain whose function is thought of course would not respond to electricity.



(From Carpenter's Physiology.)

Only the living soul can command them. But the sensor-motor part, as shown in this living monkey's brain, experimented upon by Fritsch, Hitzig, and Ferrier, is a real telegraphic instrument. Pour an electric current on the spot marked 1 and the hind foot moves as in walking. Electrify 5 and there is a forward motion of the arm.

Electrify *a, b, c, d*, and the hand closes into a fist. The nerves are the telegraphic wires, buried wires of the latest fashion. The many



(From Carpenter's Physiology.)

nerves entering the brain, when pictured, remind one of the many wires entering a telegraph office. Impressions come to the afferent or ingoing nerves from the outside world and are translated or trans-

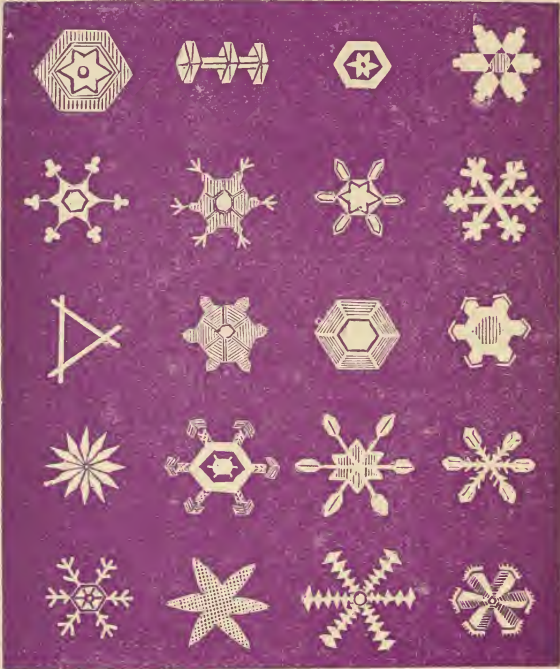
formed at the next office, the sensorium, into "sensations," then reaching sensory-motor nerves in the brain, they become successively "ideas," "emotions," "intellectual operations" (sometimes "emotions" are skipped), and then "the will" telegraphs the motor impulse, by the efferent or outgoing nerves, what to do. Now, if the "impressions" in such a case came from placing the hand on a hot stove while groping at night in a dark room, and if it was necessary, before the hand could be removed, to telegraph from one of those offices to another, and have the impressions translated into "sensations," and then into "ideas," and then into "emotions," and then into "intellectual operations," before "the will" could order the "motor impulse" to remove the hand, it would be badly burned. But one of the recent discoveries of science is that in such cases intellect and will are not consulted, but the deputy brains in the spinal cord or sensory ganglia instantly remove the hand by what is called involuntary reflex action.⁷

Closely related to the machinery found in nature are the arabesques, the mathematical forms of beauty of which illustrations have been given in lenses and cells, to which should be added the wonderful crystals of the snow and the ice flowers and crystallized hail and common ice, all built on perfect angles of 60° and 120° . When Pascal as a child stole away and worked out geometric forms by himself, it was

⁷ Paul Tyner, in *The Arena*, June, 1894, and *The New Science Review*, October, 1895, citing the fact "that in post-mortem dissections of the blind, the nerve cells at the tips of the fingers have been found identical in formation with the gray matter of the brain," suggests that "we think all over," the whole nervous system being the organ of thought.

counted an evidence of superior intelligence. Does nature's marvelous geometry prove the lack of it?

The chemistry of nature proves Mind in nature as clearly as that is proved by its mathematics and machines. In the minute cells of plants, for instance,



"THE TREASURES OF THE SNOW."

feats of chemical analysis and synthesis are achieved that not only duplicate but excel those of the best human laboratories.⁸ Man has never yet invented a machine for turning stones to food, but every food-

⁸ See Dr. J. R. Nichol's "Fireside Science," pp. 262, ff.

bearing plant is just that. God's laboratories in nature change cane sugar to fruit sugar and grape sugar, and back again, and starch to sugar and back again, but in both these processes man's chemistry can follow God's only in the first change. Man can compound mineral waters, but none equal to those God makes.

I have found nothing, save personal experience, which makes the existence of a personal God seem so *real* as my casual studies of the divine machinery of nature, which confirm the teaching of the Bible, that man is the image of God, and God the Father of our spirits, a Mind like ours, though infinitely greater.⁹

It has been objected that many of these evidences of adaptation are found in connection with weapons and poisons whose purpose is pain, and that the Mind revealed in nature is indeed intellectual but not beneficent. Romanes, even while he credited this difficulty, suggested the answer, namely, that God seeks perfection in spite of pain, indeed by it, in nature and human nature alike.¹⁰ Drummond has given further answer in showing that nature reveals not only the selfish masculine "struggle for life," but also the unselfish feminine "struggle for the life of others," the germ of self-sacrifice in motherhood.¹¹ This triumph of love is not "brought to light" in nature, but in revelation. Yet nature is not wholly dark in this matter. It hints at the mission of pain in relation to perfection and sacrifice.

⁹ Fatherhood is not a mere figure, borrowed from man as applied to God, but he is the divine original of Fatherhood, "of whom every family in heaven and earth is named" (Eph. 3 : 15).

¹⁰ "Thoughts on Religion."

¹¹ "The Ascent of Man."

§ 3. In the foregoing studies we have considered only the lesser hemisphere of the argument from design, known as *teleology*, which relates to the adaptation of means to ends in single objects or small groups. There remains time only to suggest the larger hemisphere of *eutoxology*, which would by itself afford sufficient proof of God in nature from the evidence of order, plan, and progress, in the history of the world. Professor Hicks, in his "Critique of Design Arguments," after making the division just given, reminds us that while Socrates relied chiefly on teleology, Cicero preferred the stronger argument from eutoxology, pointing those who said that some of the seeming evidences of design in single objects might be the result of accident (moderns would say, of "natural selection") to the impossibility of so explaining the orderly plan of the whole universe. For example, he says: "A hog turning up the ground with his nose may make something of the form of the letter A; but do you think that a hog might describe on the ground the Andromache of Eunius?" Evolutionary studies have greatly strengthened eutoxology since the days of Cicero.¹²

¹² Sir Douglass Galton, in his address as President of the British Association for the Advancement of Science, in 1895, says: "We have begun to realize that electricity is closely connected with the vibrations which cause heat and light, and which seem to pervade all space—vibrations which may be termed the voice of the Creator calling to each atom and to each cell of protoplasm to fall into its proper position, each, as it were, a musical note in the harmonious symphony which we call the universe." Cicero's illustration brought down to date would suggest a scientist entering a great publishing house for the first time, and, when none of its firm or force were in his range of vision, discovering type-setting machines and the huge presses that print and fold automatically, and so leaping to the conclusion that "matter and force" without mind produced the paper. The writer has an ancient kanoon, a harp of a thousand strings, which was played in the lap with chamois-covered sticks. Evolution has put it on legs and pivoted the multi-

The separate parts of nature show design as clearly as an equipped soldier, but the argument is greatly re-enforced when we see these separate parts in step with each other, marching forward age after age under the manifest leadership of an eternal and universal and constant Commander.

Though this eutoxology is the strongest design argument, we believe in teleology also because every adaptation must have come ultimately, if not immediately, from intelligence, and is explained far more reasonably by the doctrine of the divine immanence than by the hypothesis of "natural selection."¹³ Evolution, if true, is "a process, not a power." With Darwinian scholars eutoxology should be pressed, the supreme argument that cosmos must have an intelligent Cause; but to those who are not prejudiced by the improved Darwinian hypothesis the resemblance of a thousand machines of man to those of God proves more vividly the truth of Browning's Christmas lines :

" Though he is so great and we so dim,
We are made in his image to witness him."

plied drumsticks in connection with a keyboard, and so it has developed, by the survival of the fittest, in a long period of improvement, through the harpsichord into the piano; but this evolution has not been mechanical. So in the evolution of the shepherd's reed into the pipe organ. The progressive harmony of the universe is no less the work of mind.

¹³ Dr. Robert Munro, President of the Anthropological Section of the British Association for the Advancement of Science, at the annual meeting in 1893, to which we have referred, said, in line with the whole religious trend of the meeting: "In the process of organic evolution it would almost appear as if nature acted on teleological principles, because many of her products exhibit structures which combine the more perfect adaptation of means to ends along with the greatest economy of materials." Romanes to the last declared that while Darwinism might do away with teleology, it could not do away with eutoxology. Matter and force might explain single instances of design, and even successive instances of it, but they could not explain the order and progress of the harmonious universe. Cosmos requires a Creator.

Some of the very men who depend on the rudest arrow-heads to prove that man's mind was at work in certain ancient ages, ask us to believe that the infinitely more beautiful forms and infinitely more effective implements of nature are the mere work of chance, which they disguise under the new name of "natural selection."

It is related that a Western skeptic once said, "If I could only see plan and order in nature I would believe in a God." Just then, as if taken at his word, he saw a plant, known as the *Texas Star*, at his feet. Picking it up he counted its petals, and found there were five. He counted the stamens, and found five. He then counted the sepals, and found five. Desiring to find in nature some evidences of an Intelligence superior to human and other than mechanical force, he determined by multiplying to see how many chances there were of this flower, having in it these three fives, being brought into existence without the aid of intelligence. He found, of course, the chances to be as 125 to 1. Then multiplying this number by itself, he saw that the chances against there being two such flowers, each having these exact relations of numbers, are as 15,625 to 1. Looking over the fields and on the roadside, he saw thousands of this plant about him, evidences of supreme Intelligence. Kissing the flower, he cried out, "Bloom on, little flower, *you* have a God; *I* have a God; your God and Maker is my God and Maker."

He had been led to Christ by a star no less divine than that which led the wise men to him. In the words of Longfellow :

“ Wondrous truths and manifold as wondrous,
 God has written in the stars above ;
 But not less in the bright flowerets under us
 Stands the bright revelation of his love.”

* * * * *

“ Making evident our own creation
 In these stars of earth, these golden flowers.”

A child, looking at a picture of some idols, asked her mother if the people where those idols were worshiped saw the same sun and moon and stars that we see. On her mother's replying, “ Yes,” she exclaimed, putting her finger on the picture of a stone image, “ *I should think they'd know 'twould take a better God than that to make the sun and stars.*” We say the same to the materialist, pointing to his clam-shell god, from which he would have us believe that all things, including the brain of a Shakespeare and the heart of Christ, have been evolved without a guiding Mind. As well tell us that the Weather Bureau, with its telegraphs, telephones, barometers, thermometers, and printing press, was the accidental product of a gale as tell us the great machinery hall of the universe is “ a fortuitous concourse of atoms,” a mindless development of mud and mist.¹⁴



ANCIENT HAWAIIAN IDOL.

¹⁴ The “ Creed of Agnostic'ism” has been thus formulated from the utterances of its chief priests :

“ 1. Matter is the origin of all that exists, without the intrusion of any creative agency ; all natural and mental forces are inherent in it. Nature, the all-engendering and all-devouring, is its own beginning and end, birth and death. (Büchner, ‘ Kraft und Stoff,’ pp. 32 and 88.)

“ 2. At first there existed only a cosmic gas · then a fiery cloud ; next a molten spheroid, in which not alone the more ignoble forms of life . . . but the human mind itself . . . all our philosophy, all

Tyndall, the great apostle of materialism, seems to have experienced a reaction against it, as did Romanes, at the last, for in a posthumous note on Carlyle and Emerson he said: "Napoleon, gazing at the stars and graveling his savants with the question, 'Gentlemen, who made all that?' commended itself to their common sympathy. It was the illegitimate science which, in its claims, overstepped its warrant, professing to explain everything, and to sweep the universe clear of mystery, that was really repugnant to Carlyle."¹⁵

It looks as if the saying that a little learning draws a man from God and fuller study brings him back again were to have a new illustration in the case of natural science. The discovery of "secondary causes" no doubt made many think God had been banished from his world; but now science finds need of a First Cause to account for the multitudinous and immeasurable Force that drives the vast machinery of the universe. It is remembered that

our poetry, and all our art . . . all are supposed to have been latent and potential. (Tyndall, 'Scientific Use of the Imagination.')

"3. Thereupon followed a long cooling process. The vapors were condensed; the crust of the earth, its seas, lakes, and rivers, and life itself were formed. The difference between a living and a non-living body is a difference of degree, not of kind. (Fiske, 'Cosmic Philosophy,' p. 422.) All natural bodies with which we are acquainted are equally living. (Haeckel, 'Natürl. Schöpfungsgesch.' by Dr. Ernst, 6 edit.)

"4. Light shines upon the water, and it is salted. Light shines upon the salted sea and it lives. (Oken, 'Elem. Physiol.')

Thus was produced the sea-mucus (or protoplasm), which is the life stuff or physical basis of the earliest and simplest organisms. (Sec. 905, Ray Society's Edit. 'Oken's Physiol.')

"5. All the forms of vegetable and animal life, including man, have been successively and gradually developed from the earliest and simplest organisms (Spencer, 'Social Statistics,' p. 79), and, in particular, man himself is, without doubt, a lineal descendant of the anthropoid apes." (Haeckel, *l. c.*)

¹⁵ Quoted, *Christian Advocate*, January 8, 1894.

Newton did not, like materialists, count gravitation a god, but only God's mode of action. It is seen that what man's will force does in his own body and environment for himself or for others in interposing and overruling laws of nature is like what is done on a larger scale in the world, which is not a machine of perpetual, mechanical motion, but the regular yet variable expression of thought and will.

A fountain cannot rise higher than its source. Intelligence exists. Nothing less than Intelligence could have produced it.



Professor Joseph Henry, of the Smithsonian Institution, who, before he passed from the study of nature to the presence of nature's God, was generally recognized as hardly second to any man of this age in his broad and scholarly grasp of all sciences, in one of his latest letters declared to a friend his scientific satisfaction in the old argument from design, as proving the existence of a spiritual and personal God in and above and before the

natural world. The pith of his argument is as follows :

“ In accordance with this scientific view, on what evidence does the existence of a Creator rest? First, it is one of the truths best established by experience in my own mind, that I have a thinking, willing principle within me capable of intellectual activity and of moral feeling. Second, it is equally clear to me that you have a similar spiritual principle within yourself, since when I ask you an intelligent question you give me an intellectual answer. Third, when I examine the operations of nature, I find everywhere through them evidences of intellectual arrangements, of contrivances to reach definite ends, precisely as I find in the operations of man ; and hence I infer that these two classes of operations are results of similar intelligence.”¹⁶

We may fitly add here the recent utterance of the great inventor, Edison,¹⁷ who has been a close student

¹⁶ Memorial of Joseph Henry, published by Congress, pp. 24, 25.

¹⁷ Pittsburgh *Christian Advocate*, July 22, 1893. It is appropriate to note, in this connection, that the cablegram sent in 1896 from New York City round the world, by the power of Niagara dynamos, in sixty minutes, in the same devout spirit that was shown in the first telegraphic message (“What hath God wrought?”), uttered this message in all continents: “God created, nature treasures, and science utilizes electrical power for the grandeur of nations and the peace of the world.”

This chapter may seem to be unrelated to the author's ethical specialties, but, in fact, it presents their foundations. *Ethical rules can have no adequate authority to one who does not believe, first of all, that the universe is governed ethically.* Agnostic ethical culture, even in its best forms, Confucianism and Buddhism, has failed to convert countries, or even personal conduct and character for lack of authority. Utilitarian morality, so called, is signally lacking in real utility. Only morality with God behind it is adequate for worlds and hearts with sin within them.

of the mighty energies of the universe, and who thus expresses himself concerning the existence of a personal Creator : " I tell you that no person can be brought into close contact with the mysteries of nature, or make a study of chemistry, without being convinced that behind it all there is supreme Intelligence. I am convinced of that, and I think that I could, perhaps I may some time, demonstrate the existence of such Intelligence through the operation of these mysterious laws with the certainty of a demonstration in mathematics."

The existence of a personal Intelligence in and back of the visible world *has been* mathematically demonstrated by the evidences of design, order, and progress in nature.

Science is taking up the words of Dante :

" Love draws the sun and all the other stars."

Science is also confessing with Lowell :

" Behind the dim unknown
Standeth God within the shadow,
Keeping watch above his own."



MOUNT HERMON.

(From Ridgeway's "The Lord's Land," by permission.)

II.

CHRIST THE CREATOR.

§ 4. SCIENCE proves Mind in nature. Scripture proclaims that Mind to be the Mind of Christ. "In the beginning was the Word. . . . The world was made by him, and the world knew him not."¹ "Nor

¹ John 1:1. All through Job, Proverbs, and Ecclesiastes personified Wisdom is recognized as the God of nature. Some would translate *logos* in John 1:1 reason; but Rev. Dr. C. H. Parkhurst shows that its application to Christ would remain. "In the beginning was the reason for the universe, and the reason for the universe was with God and was God; it was himself; but that reason was made flesh." Here it is appropriate to quote an utterance of Professor Max Müller, in the *Nineteenth Century*, December, 1894: "I cannot help seeing order, law, reason or *logos* in the world, and I cannot account for it by merely *ex post* events, call them what you like—survival of the fittest, natural selection, or anything else. Anyhow, this gnosis is to me irresistible, and I dare not therefore enter the camp of the agnostics under false colors. If agnosticism excludes a recognition of an eternal reason pervading the natural and the moral world, if to postulate a rational cause for a rational universe is called gnosticism, then I am a gnostic, and a humble follower of the greatest thinkers of our race from Plato and the author of the Fourth Gospel to Kant and Hegel." And Principal A. W. Fairbairn gives further emphasis to the profound relation between reason in us and reason in nature in the following words from his Chautauqua lecture on "Transcendentalism in the Interpretation of Nature" (Chautauqua *Herald*, August 20, 1895): "There is nothing more wonderful in this century than the rediscovery of lost tongues. Before 1820 no man knew anything of Egyptian hieroglyphics save that they were very remarkable figures, with very remarkable pictures. . . . These great arrow-headed, hieroglyphic characters expressed real thought, and their intelligibility to intellect was due to their creation by intelligence. The principle that explains their interpretation explains the interpretation of the world. The world is reasonable to man because man is reason; the very laws, the very qualities, and the very ideas that the reasonable world expresses dwell in the reason that interprets it."

does it yet know Christ as its Creator. Although John declares four times that the world was made by him who afterward "became flesh and dwelt among us;"² and although the Book of Hebrews twice declares the same; and although Paul, in Colossians, twice declares that "in him were all things created," and that by him all creation is held together, and that with him all creation is filled,³ yet how seldom does any one reply to a child's questions about the great world, "Jesus made it!" Satan, in the great temptation, recognized Christ as Lord of nature, which is more than some Christians have done. He is called Redeemer often, but how seldom Creator! This is due, in part, to the Apostles' Creed, so called, which needs to be conformed to the above teachings of the apostles by changing it to read: "I believe in God the Father, Almighty, Maker of Heaven and Earth *through* Jesus Christ his only Son our Lord."

² John 1:3, 10, 14. Rev. 4:11. All through these studies we aim to use the Revised Version for Bible quotations except where otherwise stated, with M. for passages introduced from its margin. Why so many Christians should prefer the less accurate rather than the more accurate translation of God's thought, tradition rather than truth, it is hard to understand. In the points in which the American revisers put on record a different translation from what was chosen by the British revisers, we follow the former, chiefly because it is conceded that they were the more literal the latter the more conservative. Those who use the revision (as it is now chiefly used) as a commentary only, will surely prefer to have the more correct and critical revision in such citations as are made in a work like this. Fords, Howard & Hulbert, New York, have published the New Testament and Psalms in separate volumes with American preferences substituted in the text. Harper's Franklin Square edition of the revision has put American preferences, except those of general application, into footnotes, as more convenient than the official consignment of them to the appendix.

³ Heb. 1:2, 10-12. Col. 1:16, 17. Other passages on creation: Gen. 1:2. Job 38, 39. Ps. 33:6-9. Isa. 40:12-31. Jer. 10:10-16. Eccles. 12:1.

How the Creatorship of Christ harmonizes the great facts of nature and Scripture !⁴

If the Author of nature and human nature be a Mind, like us but greater, then we are assured by our own instincts as fathers and friends that he could not leave us unvisited and uninstructed. Incarnation and inspiration are logical corollaries of creation.

In the words of Browning :

“ Would I fain in my impotent yearning do all for this man,
And doubt he alone shall not help him who yet alone can ? ”

If there be a God, miracles are as much to be expected from him as great deeds from great men. And if Christ be the Author of nature, what wonder that life and death obeyed his word !⁵ Perfection

⁴ Mr. Gladstone's annotated edition of Butler's "Analogy" (Macmillan & Co., \$7.00) appears opportunely just when many scientists have become theists, but not yet Christians. They see "difficulties" not in sectarian dogmas only, but in the essentials of Christianity itself. To which Butler replies that nature presents "difficulties" analogous to those of Scripture, and as one believes in the God of nature, despite "difficulties" suggested by some of his modes of procedure, because there are greater "difficulties" in denying an intelligent authorship of the world, so he should not deny that the same authorship lies back of the written and living Word because the same modes of procedure (*e.g.*, perfection sought even at the cost of pain) are found in the Word as in the world, there being greater "difficulties" in denying than in accepting the divine origin whether of the Word or of the world.

⁵ Oh, it is an interesting thought to me to know that Christ had something to do with the creation. I see now why it was so easy for him to change water into wine ; he first created the water. I see now why it was so easy for him to cure the maniac ; he first created the intellect. I see now why it was so easy for him to hush the tempest ; he sank Gennesaret. I see now why it was so easy for him to swing fish into Simon's net ; he made the fish. I see now why it was so easy for him to give sight to the blind ; he created the optic nerve. I see now why it was so easy for him to raise Lazarus from the dead ! He created the body of Lazarus and the rock that shut him in. Some suppose that Christ came a stranger to Bethlehem. Oh, no. He created the shepherds, and the flocks they watched, and the hills on which they pastured, and the heavens that overarched their heads, and the angels that chanted the chorus on that Christmas night.—*T. De Witt Talmage.*

will lead him as the Author of nature to do things usually in the same way because always in the best way, but will not prevent unusual deeds for unusual ends. "Natural" and "supernatural" should mean only the usual and unusual ways of God. It is strictly atheism to *leave God out* of any part of his world, whether by calling it "natural" or "secular."

The doctrine that Christ is the Creator harmonizes with the two facts that in nature and in Christ alike we find Mind like ours but greater.

The doctrine that man is "the image of God" also derives profound significance from the two facts that the Spirit in nature resembles, though it exceeds man's, while the "spiritual *body*" with which Christ returned to Heaven was a glorified human form—was it not the same spiritual "*image*" after the pattern of which man was originally made, the human elements being only those which Christ had lost, as we shall lose them also in the transfiguration which we call resurrection.⁶

Reason and Science, like Moses and Elijah on Hermon, stand on either side of Christ, but only as ministering spirits to confirm and increase his glory, and the voice of God comes to us in our perplexity,

⁶ The old anthropomorphic God of Abraham and Moses, of St. Bernard and St. Louis, of Calvin and Bossuet, was a very real, intelligible, active, moral ruler of this earth, with most of the attributes, feelings, and passions of man idealized. All this shocks the moralist and the philosopher of today. . . . Now, the religion of humanity is a frank return upon the healthy, instructive, anthropomorphic view of religion. *No object of religion can be a source of moral power over man unless it be anthropomorphic in the fullest sense—that is, sympathetic, akin to man, familiar to man.*—*Frederick Harrison, in Fortnightly Review.*

The incarnation of God is the truth embodied in all the scriptural anthropomorphisms.—*Delitzsch.*

The incarnation expresses the humanity of God and the divinity of man.—*Principal A. W. Fairbairn.*

“Hear ye him.” There can be no contradiction in these varied revelations of God, and no cause for our hearts to be cast down with fear. “Arise, and be not afraid.”

On Mount Hermon, at the coronation of Christ—our point of view in all these studies—we behold not only his, but also the Transfiguration of nature—the “bright cloud,” the transfigured flesh, the gleaming snow, the very rocks, all aglow with his presence who called himself “the light of the world.” Since Christ made and rules and fills the world, none of it can be “secular.” It is all “holy ground.” All nature, like the burning bush, is ablaze with Christ. It was perhaps because he was King of nature that he chose to have his coronation, not in temple courts, like other kings, but rather on “the high mountain apart,” that towers like a snow-crowned palace above the hills of Palestine.

Here it is appropriate to quote the words of Fichte :

“The universe now appears to my eye in a transfigured form. The dead, clogging mass, which before only stopped up space, has vanished, and in its place flows and billows and roars the eternal stream of life and power and deed, of original life, of thy life, Infinite One ; for all life is thy life, and only the religious eye presses into the realm of true beauty.”

Creation itself is but a large incarnation of him who said, “I am the life.” To an increasing number of scientists nature is seen and felt to be filled and thrilled in every part with Divine energies. Gravitation is but another name for God, and “life” for love.

In the words of another :⁷

⁷ Edith M. Thomas, “Nature’s Apocalypse,” in *The Congregationalist*.

“ All around him Patmos lies,
 Who hath Spirit-gifted eyes,
 Who his happy sight can suit
 To the great and the minute.
 Doubt not but he holds in view
 A new earth and heaven new ;
 Doubt not but his ear doth catch
 Strains nor voice nor reed can match.”

To such an ear came the sound of creation's antiphony in the fifth chapter of Revelation, where every creature of heaven sings: "Worthy is the Lamb that hath been slain to receive the power, and riches, and wisdom, and might, and honor, and glory, and blessing. And every created thing which is in heaven, and on the earth, and under the earth, and on the sea, and all that are in them heard I saying (the heavenly chorus continuing and all creation below joining in the response), 'Unto him that sitteth on the throne, and unto the Lamb be the blessing, and the honor, and the glory, and the dominion for ever and ever.'"

Christ is described in the Epistle to the Colossians, which interprets the Divine Heart of nature and presents Christ as King of the cosmos, as in Ephesians he is head of the Church, as "the image of the invisible God," "the Son of his love," "the first-born of all creation; for in him were all things created in the heavens and upon the earth, things visible and things invisible, whether thrones, or dominions, or principalities, or powers; all things have been created through him and unto him; and he is before all things and in him all things hold together." As Professor W. W. White clearly shows, the error which the Epistle to the Colossians was written to refute was a mixture of Judaism and Oriental theoso-

phy. God was pictured as embodied Goodness, but far above his creation, which they represented as embodied Evil far below. Between the two was the *pleroma* or filling, or "fullness," consisting first on the upper side, next to God, of higher angels, including Christ, whom they counted angelic but not divine; then lesser angels, graded down to the lowest, which last were tainted enough to touch the natural world. Certain men claimed a monopoly of this "wisdom" and "knowledge," and the right to initiate others into "mystery;" but the common people were excluded from the "perfection" such "wisdom" brought. Paul declares that *Christ* is "wisdom," "knowledge," "perfection;" his Gospel a *revealed* "mystery," open fully to the lowliest; himself the *pleroma*, the "fullness of him that filleth all in all," connecting the world with the Father.

GOD
GOOD

PLEROMA:

{ HIGHER ANGELS,
INCLUDING CHRIST.
LESSER ANGELS.
LOWEST ANGELS.

EARTH
EVIL

"He that ascended is the same also that descended that he might fill all things." He who loved and interpreted and commanded nature in his miracles on and in and around the sea of Galilee is the same who created and now controls the forces of sea and sky, of land and life. And so-called "natural laws," including the laws of health, of temperance, and of purity are therefore but parts of his supreme law, as binding upon us as those which he wrote upon the rocks at Sinai.

§ 5. "In the beginning was the Word"^s—and

^s John I : I.

“ *before.*”⁹ Having traced the life of Christ from Bethlehem back to creation, we are prepared to go further back to that measureless final period of his life “ *before the world was.*”

Let Hermon and the earth itself disappear, leaving before our eyes only the transfigured Christ and “ the bright cloud ”¹⁰ which is ever the ermine robe of the Divine Father.¹¹ Thus in imagination we behold the glory and fellowship to which Christ was looking back on the night before the crucifixion, when, gazing skyward, he prayed : “ Now, O Father, glorify thou me with thine own self with the glory which I had with thee before the world was.” “ Thou lovedst me before the foundation of the world.”¹² Thus we are carried back to the time, nay to the eternity, when Christ was “ the only begotten Son which is in the bosom of the Father.”¹³ We are listening to that same voice of the Father, which said at the transfiguration, “ This is my beloved Son in whom I am well pleased,”¹⁴ as his words come to us through David and the New Testament from the eternal heavens where they were spoken to Christ and about him before the world was made.

“ Thou art my Son ; this day have I begotten thee ;”¹⁵ and again, “ I will be his Father and he shall be my Son ;”¹⁶ and he shall say unto me, Thou art my Father ;”¹⁷ and when he bringeth the Firstborn

⁹ John 17 : 5.

¹⁰ Matt. 17 : 5.

¹¹ Ex. 13 : 21 ; 40 : 35-38. Ps. 80 : 1.

¹² John 17 : 5, 24.

¹³ John 1 : 18.

¹⁴ Matt. 17 : 5.

¹⁵ Ps. 2 : 7. Heb. 1 : 5.

¹⁶ 2 Sam. 7 : 14. Heb. 2 : 5. In this and other passages, prophecies of Israel or of Israel's kings are shown to have also a relation to Christ.

¹⁷ Ps. 89 : 26, 27. All the Targums apply this to the Messiah.—*Hebrew Christian.*



“They saw no one, save Jesus only.”

“He was found alone.”

into the world, he saith, " Let all the angels of God worship him." ¹⁸ Of the Son he saith, " Thy throne, O God, is for ever and ever ; a scepter of equity is the scepter of thy kingdom. Thou hast loved righteousness and hated wickedness ; therefore God, thy God, hath anointed thee with the oil of gladness above thy fellows." ¹⁹

" The Lord," David informs us, " said unto my Lord, Sit thou at my right hand till I make thine enemies thy footstool." ²⁰ The psalmist also echoes down the ages to us that other saying of the Father to the Son : " I also will make him my Firstborn, the highest of the kings of the earth."

As in the last two passages, so in others, ²¹ that far-off eternity is thrown suddenly into relation to things of time (which is all an " eternal now" to God), especially into relation with creation, ²² as in that passage where one called Wisdom ²³ by Solomon does

¹⁸ Ps. 97 : 7. Heb. 1 : 6.

¹⁹ Ps 45 : 6, 7. Heb. 1 : 8, 9.

²⁰ Ps. 110 : 1. Heb. 1 : 13. Acts. 2 : 34-36. Matt. 22 : 41-46.

²¹ Ps. 2 : 7, 8.

²² Heb. 1 : 10-12. Ps. 102 : 25-27. John 1 : 1-3. Col. 1 : 16, 17.

²³ Prov. 8 : 22-30 In the city of Constantinople there is a venerable building, now used as a Mohammedan place of devotion, but originally erected for a Christian church. It was so beautiful that, when proud Justinian had finished it, he exclaimed : " I have eclipsed thee, O Solomon !" This is called the mosque of St. Sophia ; and, singularly enough, it thus retains its old name. " Sophia" is a word meaning wisdom ; so St. Sophia signifies Holy Wisdom ; hence we have it as a historic fact that the primitive believers sometimes worshiped the Lord Jesus under such an Old Testament name. The apocryphal Book of Wisdom, written just before Christ, says that Wisdom in the beginning sat in God's throne, and made the world. It is probable that in every case this is a vivid and picturesque presentation of our Lord Jesus Christ, bringing the messages of redemption to men from heaven. 2. In the New Testament, our Lord is several times called Wisdom. Once (Matt. 11 : 19) he claims it openly ; once (Luke 11 : 49) he takes it colloquially, as if everybody knew it belonged to him ; once (1 Cor. 1 : 24) the apostle ascribes it to him. 3. Again the first chapter of John's gospel contains a long disquisition concern-

just what is less poetically ascribed by John to the Word :

“ The Lord possessed me in the beginning of his way,

Before his works of old.

I was set up from everlasting, from the beginning,
Or ever the earth was.

When there were no depths, I was brought forth ;
When there were no fountains abounding with
water.

Before the mountains were settled,

Before the hills was I brought forth :

While as yet he had not made the earth, nor the
fields,

Nor the beginning of the dust of the world.

When he established the heavens, I was there :

When he set a circle upon the face of the deep :

When he made firm the skies above :

When the fountains of the deep became strong :

When he gave to the sea its bound,

That the waters should not transgress his com-
mandment :

When he marked out the foundations of the earth :

Then I was by him, *as* a master workman :

And I was daily *his* delight,

Rejoicing always before him.”

In these words Solomon has answered his own question of another chapter :

“ Who hath ascended up into heaven, and descend-
ed ?

ing a strange person called the “ The Word ;” and what *Logos* means is very like what *Sophia* means ; they both seem to signify God coming down from heaven so as to hold communication with men by reason and speech.—*Rev. Dr. C. S. Robinson, in Sunday-School Times.* Delitzsch remarks, “ The utterances of Wisdom come remarkably into contact with those of Jesus.”

Who hath gathered the wind in his fists?
 Who hath bound the waters in his garment?
 Who hath established all the ends of the earth?
 What is his name, and what is his Son's name,
 thou knowest?"

The Jewish Zohar answers, "The Christ" (Fol. 119, col. 473).

Micah says of him who was to be born in Bethlehem that "His goings forth are from of old, from everlasting."²⁴

These pictures of Christ as our Heavenly Creator before he became our human Redeemer are of more than theological value. Without them we cannot even appreciate the great humane lesson of his incarnation as an example of condescension. If we begin our studies of his life at the manger cradle of poverty and see his mother offering for her cleansing two doves—such a sacrifice as was brought only by the poorest of the people—and then behold her going to her humble home at Nazareth to rear the child for a mechanic, we shall not discover any great condescension, any sacrifice of refined feeling in his subsequent life among the lowly.²⁵

But if we behold him first in the Heavenly Palace of God, surrounded by worshiping angels, whence "he that descended"²⁶ "came down,"²⁷ as he was wont to say, then we shall be able to appreciate the condescension foretold by Isaiah: "Unto us a child is born, the Father of eternity, the Mighty God;"²⁸

²⁴ Micah 5 : 2.

²⁵ Tradition takes the traveler to a cave in Bethlehem as the stable in which Christ was born, and to another cave in Nazareth as his boyhood's home. If these caves are not the true places, the latter were surely no less lowly.

²⁶ Eph. 4 : 10.

²⁷ John 6 : 38.

²⁸ Isa. 9 : 6.

and the condescension pictured in Paul's ladder from Heaven down to the cross : " Have this mind in you, which was also in Christ Jesus : who existing in the form of God, counted not the being on an equality with God a thing to be grasped, but emptied himself, taking the form of a servant, being made in the likeness of men ; and being found in fashion as a man he humbled himself, becoming obedient even unto death, yea, the death of the cross." ²⁹

Only on the background of Christ's heavenly glory shall we appreciate (and so imitate) that description of his condescension, " Though he was *rich*, yet for our sakes he became poor."

As our new industrialism is renewing class conflicts, the imitation of Christ in his giving of himself to the poor is increasingly needed. The social settlements and the unpaid " friendly visitors" of charity organization societies are tokens that at least a few of the Christian leaders of social reform appreciate that it is not sufficient to say, " Here is my check, send a city missionary to uplift the poor." Nothing will meet the case but that *noblesse oblige* which is prompting some of the rich and educated to say, " Here am I, send *me*." In his poor, Christ says to the rich, " I seek not yours, but *you*." What the poor need more than money and charitable machinery is character, courage, comfort, counsel, the uplift of brotherly fellowship with stronger minds and hearts.

The Church must come back, after its wasted years of throwing alms at beggars, to the wisdom of its very first charity, when Peter said to the cripple at the Beautiful Gate : " Silver and gold have I

²⁹ Phil. 2 : 5-8.

none ; such as I have give I thee. In the Name of Jesus of Nazareth, rise up and walk," and then lent a hand and put him on his feet and lifted him out of his beggary by the impartation of new life. " That transformation of the poor can still be wrought as surely, if not as suddenly, as in the ancient miracle by the giving of ourselves to our weaker brothers " in his Name."

The " up-town" march of city churches does not keep step with this evangel. In such a case no doubt the local church is less to blame than the wealthy members who have withdrawn not only themselves, but also their support ; less to blame also than the denomination, which might use its home missionary funds much more effectively in subsidizing down-town city churches, adapting them to their new environment than in replacing them by the " missions," which the proud poor consider as " second-class cars," or in planting churches in what will always be sparsely settled communities that are already oversupplied with underpaid ministers. From down-town New York a score of evangelical churches have moved up-town during a few years past, leaving behind their poorer members and their historic temples, hallowed by sacred history. The like is occurring in other large cities. Meantime, the number of souls and the need of Christian influences in the region deserted has increased. Only the dollars have diminished. The deserted church, though weak financially, had historic dignity. Subsidized by its " alumni" or by denominational aid, it would still have been a " church." A " mission" put in its place, not only because of its weaker pulpit and inferior music, but also because it *is* a " mission" to

down-town heathen, will not be much attended by *men*, but chiefly by children of its Sabbath-school. And yet the Christian army goes on evacuating the very spots where society as well as individuals most need it, and the Church at large shares the blame for standing by like Saul at Stephen's death, "consenting." Preachers say to their ecclesiastical courts in behalf of their removals, "Most of our members have moved up-town, and the population around our church is now largely Jews and foreigners." The fact is, the "most" that has moved is not "most" numerically, but only financially. And as to "Jews and foreigners," it is hard to see why, if their souls are worth enough to send missionaries to them in foreign lands, at great cost, it is not worth while to make some little effort to save them in the more favorable environment of our own land.

Shall the whole burden of removing class and race feeling in our composite people be rolled upon the public schools, now deprived of the Bible of brotherhood in many of our cities, where these problems are chiefly met?

"The rich and the poor meet together, the Lord is the Maker of them all" is a text that should be illustrated in every Church and in every Sabbath-school, not by sufferance only, but by special effort, if need be. The social settlement is but the effort of individuals, Christian in spirit if not always in name, to capture the ground which the organized Church has surrendered. It points the way for such a reorganization of down-town Christian work as is needed not by the poor only, but also by the rich and by civilization itself, imperiled by class hatreds, which equality and fraternity in the churches must

help to heal. Let every down-town church and Sabbath-school be treated as a social settlement, to which rich and educated men and women and children shall give themselves, not in condescension, but in brotherhood.

Behold the Prince of Paradise,
The peerless Wisdom of the wise,
The Millionaire of stars, arise,
And laying by his wealth and crown,
His palace steps to earth come down,
The sinful and the sad to raise
And point them to the gates of praise,
And teach the selfish sons of earth
That service is the highest worth ;
That he is nearest to the throne
Who nobly seeketh not his own ;
That they whose learning bows to love
Shall see its wisdom shine above ;
And they the lowliest who befriend
With Christ to glory shall ascend.

WILBUR F. CRAFTS, *Let this Mind be in You.*

III.

TRANSFIGURED FLESH.

§ 6. ANOTHER lesson from the Oldest Testament of nature, as opened to us in the Holy Mount, is that every man may metamorphose his flesh through his spirit or his spirit through his flesh ; may be, in short, in a large sense, Christ or beast. This is the practical half truth in Darwinism. Its main claims as to the accidental origin of species and the animal origin of man have as yet won nothing better than the Scotch verdict of "not proven ;"¹ but evolutionary studies have been of service in showing man's danger of descending to animalism, whether ascended from it or not ; in showing also the great difference in men, to whose highest possibilities we should aspire.

It is significant that while evolutionists attempt to account for Bushmen on their uphill theory of higher life from lower, they do not attempt to so account for Christ.² If evolution was the plan of life's development it would manifestly be the plan for the whole of it, and he too should be born from below ;

¹ See my two articles, "Darwinism not Proven" (Pulpit Treasury, 1884), in which I quote seventy-two verdicts of leading scholars, of whom only six claim that the main doctrines of Darwinism are proven, the others declaring or admitting that they are not. These verdicts will also be found in the final appendix of these lectures, when the four volumes are, in 1897, published in one volume.

² Calderwood's "Evolution," 323.

and other men, with nineteen centuries more time in which to evolve, should have surpassed or at least equaled him.

It is true, however, and he so taught that the most beastlike of men may become Christlike in triumph over the flesh by receiving his spirit. Some men, no doubt, live in the "animal kingdom," where shallow text-books place us all, but no man "belongs" to it. Every being should be classified by his highest affiliations. Christ is allied to man on one side, but we classify him as divine because on the other side he is allied to God. So man is allied to animals on his bodily side, but to God and Christ and angels in his spiritual nature, and so belongs to that highest of kingdoms, which the shallow text-books omit, *the spiritual kingdom*.

The aged Emperor of Germany, of a few years since, William I., visiting a school, held up a stone and asked, "To what kingdom does this belong?" The school replied, "To the mineral kingdom." "And to what kingdom this?" said the emperor, holding up a flower. "To the vegetable kingdom" was the prompt answer. And then the emperor, wishing to illustrate the animal kingdom, said, "And to what kingdom do I belong?" The children were silent. Wiser than their books, they felt the absurdity of classifying their Christian emperor with animals. At last one child said reverently, "To God's kingdom, Sire." To that kingdom the transfigured *flesh* of the Son of man reminds us that humanity belongs, a kingdom into which we are not evolved by environment; into which we are not born from below, but from above and from within.

“As he prayed the fashion of his countenance was changed.” It is through prayer that our animal nature is subdued and our spiritual nature enthroned as its master—master because it has become a “partaker of the Divine nature;” because the human spirit, in its losing battle with the flesh, has been reinforced by the Holy Spirit. Christ pictures and proves the possibility of such a conquest. “He was tempted in all points like as we are, yet without sin.” A man of like passions with us, he ran the gauntlet of temptation unscathed because he was first filled with the Holy Spirit. It was not his Divine nature that saved him, but the permeation of his human nature with the Holy Spirit. He conquered as our example by the aid of only such allies as wait our call. It is not enough that we should overcome the downward gravitation of human nature toward what is beastly; we must rise to what is Christly, not by the crucifying, but rather by the purifying of passion, which of all our physical nature is most like creatorship.

Flesh transfigured by the renewing of the mind through prayer—that is one of the manifold meanings of the coronation of the Son of man on Mount Hermon, which pictures also the coronation that may and should occur in every man, the coronation of the spirit as King over the flesh.

Nearly all un-Christian philosophies and theologies make nature, especially “the flesh,” the seat of sin and the enemy of God. The Bible makes nature the child of God, every land a “Holy Land,” and the transfigured flesh of him who has the mind of Christ obeys his commands for the flesh: “Love God with all thy strength.” “Glorify God in your body.”

The unquestioned *facts* that the evolutionists have gathered from the comparative study of men and animals suggest as the great practical lesson of Darwinism—our duty as possessing powers above the beasts to live something more than an animal life. Shall we sink to the beasts, that border us on the lower side, or rise to likeness with Christ, who borders us on the upper side and pictures in his life what we may and should be?

The great question is not what we came from, but what are we coming to? not, Did we ascend from the animals? but, Are we descending to their level, caring for nothing higher than the gratification of our appetites and passions, with no more attention to the moral nature that separates us from animals than if we had none?

Men have known for ages that they had many appetites, passions, and emotions in common with animals. Scripture, science, history, and personal experience all showed this; but Darwin's explorations have greatly increased our knowledge on this point and underscored two great lessons which it suggests.

One of these is that *man is in danger, because of his animal nature, of being dragged down to a life like that of the lowest animals*. It is this which has made it so natural, from the days of Æsop, to picture the faults of men by fables of animals. I know of a wise mother who impressively reproves her little ones for wrongdoing by fables in which mice and other animals are made to do the naughty things which the children have done, whose ugliness they are thus made to see as mother sees it.

Man can be saved from descent into animalism

only by recovering the dominion which God gave him at the first over the whole realm of animal life, *in himself* as well as about him. It was through an animal that Satan made his first successful attack upon man, and it is on the animal side of man's nature that his subsequent attacks have been most frequently made.

"The whiskey glass has a power opposite to that of Ithuriel's spear. That touched a toad—and lo, a fallen angel! This touches a human form—and lo, a brute!" Two drunken women in New York City paused to view a dead horse. After a good look, one of them said, in a voice that was almost a wail, "God help the three of us."

During a discussion of religious topics, a dissolute skeptic said: "I tell you that, if the other animals do not exist after death, neither will man. There is no difference between a man and a beast." And the Christian with whom he was debating mildly replied: "If anybody could convince me of that it would be you."

We call a people "savage" where the God-established dominion of man's mind over his animal nature has been overthrown and the lower nature has become dictator. It is like Charles XII. sending his boots to preside over his Council of State, or Caligula defying his horse. No wonder the savage, with his body enthroned king over his soul, becomes more cruel than the animals. Falling from a higher point, the descent is lower. Such savages are found even in our own land, especially in large cities and on frontiers. And there are civilized savages among the rich—greedy, cruel, lustful.

It was savagery in the thin disguise of civilization

that made a hero of Jesse James. It is savagery that sends crowds to walking matches and prize fights, both of which are "cruelty to *animals*." It was very suggestive when, in a modern walking match, men and horses competed, and the bipeds won. They were hardly less animals than the horses. The drunkards and libertines and prostitutes are only tribes of savages in disguise. A Canadian Episcopal bishop, of Scotch birth, was the guest, some time ago, of a certain rector in Buffalo. Speaking of his visit afterward, the old gentleman said: "They were all good people, and most kind, I am sure; but do you know, my dear, they gave me water to drink at the table and upon going to bed, as if I had been a horse." Evidently he would have preferred that they should have given him *whiskey, as if he had been a savage*. It is savagery also that calls for the revolting details of the deeds of the savages of civilization in the newspapers.

But all of us, in varying degrees, are keepers of caged animals, and, like the men in the menagerie cages of circus processions, we need to be constantly watchful, lest our animal passions spring upon us and get the mastery.³ Paul was thinking of such dangers when he said, "I keep my body under." David knew of such perils when he wrote, "I will keep my mouth with a bridle," and again, "Be ye not as the horse or as the mule." And James had like analogies in his mind when he said, "The tongue can no man tame." Properly governed, the body is

³ Dr. Mark Hopkins reminds us that because man has animal nature in himself, among most primitive people men have been named from animals, and some of those names are still retained. Thus we have among us Lyons, Foxes, Wolves, Lambs, Bulls, Colts, Hogs, Hawks, Wrens, and Martins.

the most helpful of our "domestic animals" It is our war horse in the battle of life, by which our power is greatly magnified. It is a great misfortune for a strong mind to have a weak body—to be "too heavy for the animal you ride." It is a greater misfortune to be run away with by animal appetites. The body is a grand servant, but a bad master. The strong passions of youth are like a span of blooded steeds, grandly beautiful and nobly useful while we have them "well in hand" and drive them only in the enthusiasm of virtue, but vain things for safety when we lose self-control. It is one of the monstrous sins and follies of the parents and churches of this age that they allow such steeds to be lashed all along our streets into runaways by the indecent pictures of theaters, and tobacconists, and news-dealers, and by the fashions borrowed from the Paris *demi-monde*, and by the American *demi-monde* themselves, whose dens are as well known and as quickly accessible to tempted youth as any kind of business in our cities.

I recall Landseer's attempt to picture Wellington and his officers at Waterloo. One is likely to mistake the picture for a horse fair because the horses are painted so much more skillfully than the Iron Duke. Landseer also essayed to paint an English princess, but her pony is what takes the spectator's chief attention. In the palace at Turin there is an equestrian statue in which some Landseer-like sculptor has made an immense horse almost hide the small rider in whose honor it was raised. So in many human lives, the animal is more prominent than the inward man, and the appetites crowd the religious nature into the background. "They overeat their prayers." In pictures of great characters it is cus-

tomary to picture only the head and bust in unconscious recognition of the fact that it is head and heart that constitute the real man.

These animal powers, so valuable when used aright, are fraught with peril, since they make us liable to all the faults of animals.

The Bible is full of warnings against this danger of surrendering the throne of life to the animal nature. Jeremiah exclaims of his degenerate people, "Every man is become brutish." Every man today is at least in danger of becoming brutish. The enemies of Christ are described as "dogs," "strong bulls of Bashan," "ravening and roaring lions," "wolves," "vipers." Ishmael in his wickedness was pictured as "a wild ass of a man," and Israel was said to have "behaved like a stubborn heifer," and her rulers are called "dumb dogs" that gave no warning to the people of their danger. When the Psalmist had been doubting God's love and wisdom, he exclaimed, "So foolish was I and ignorant; I was as a beast before thee." Daniel represents the wicked human race under the form of beasts in contrast with Christ as the Son of man. The Jews were compared to sheep going astray. How often they followed such bell-wethers as Jeroboam and Omri in wholesale backsliding! Not less sheeplike are many today in following a multitude to do evil. When the various types of men were pictured to Peter in a vision by all sorts of animals, how appropriate it was that "creeping things" were included! What a picture of the man who makes haste to be rich by overthrowing or underpaying the poor, or by liquor selling is given in the tenth Psalm:

"He lurketh in the covert as a lion in his den:

He lieth in wait to catch the poor."

Christ calls the tricky, drunken, lustful Herod "that fox," a label for every other political "boss" whose smartness is "earthy, sensual, and devilish." How significant it was that in the olden time in Venice, when the rulers were beasts of prey, the letter-box into which men dropped their complaints to the authorities against those they wished to have put out of the way was a lion's mouth! Standards and flags representing lions, eagles, dragons, serpents, were all appropriate as national symbols of the brutal politics of former ages, but they no longer represent the humane ideals of the best citizenship of Europe and America. The eagle was an appropriate symbol for Rome preying upon all weaker nations, but it is not a fit emblem for world-befriending America.

I do not mean that there is no animalism left in American politics today. A distinguished ex-senator is reported to have said, "I would vote for an ox if he were the nominee of my party." Men hardly less animal than an ox do get majority votes. A printer expressed that truth by accident in setting up the report of a political debate in which both sides were selfishly struggling for "spoils," when he made "*pros and cons*" "*pigs and cows*." A deputation from a legislature, on a visit to the State insane asylum, while walking through the corridors, were greeted by one of the lunatics, who was peering through the gratings of a cell door, "Well, I declare, if here ain't the animals from Noah's ark!" If it was a legislature that had licensed liquor, lust and lotteries, the profound remark entitled the lunatic to liberty. On one of the members of such a leg-

islature saying, " We must return to the food of our ancestors," somebody asked : " What food does he mean ?" " Thistles, I suppose," was the reply.

The power of whiskey in elections is a thermometer showing how much the animal nature still has to do in politics ; but over this part of the animal realm God has given us dominion with the rest, and we have only to march in and possess it.

History and literature are full of warnings against this danger of the enthroning of animalism in human lives. The Romans punished the murderer of his father by flaying him alive and then tying him up in a sack with a dog, a cock, an ape, and a viper, and so throwing him into the sea, as if to say he had sunk from manhood to be a conglomeration of these creatures. The Egyptians taught that those who lived like low animals in this world would be sent back after death in the form of a sow or some other animal for endless transmigrations through similar creatures. The Hindus teach that in the future world drunkards will become frogs ; backbiters, tortoises ; misers, cranes. Socrates believed that those who gave themselves up to gluttony, lust, and intemperance would in the future world put on the nature of asses ; while the unjust and tyrannical would become wolves and hawks. Shakespeare makes Bassanio say to Shylock, as that human beast of prey is clamoring for his pound of flesh from Antonio's breast :

" Inexorable dog,
 Thou almost mak'st me waver in my faith,
 To hold opinion with Pythagoras
 That souls of animals infuse themselves
 Into the trunks of men ; thy currish spirit
 Governed a wolf, for thy desires
 Are wolfish, bloody, starved, and ravenous."

This danger of sinking into animalism also colors the common speech, and gives point to much of the wit of every land and age. The beasts of prey who devour each other on boards of trade by tricks and lies are indeed "bulls and bears." The slanderers of the dead are rightly termed "hyenas," and other secret slanderers of the living are "snakes in the grass." "The man whose highest enjoyment is fighting an adversary is a gamecock. The man who dresses in the latest style and exhibits himself at the church door while the congregation files out is a peacock. The man who consecrates his life to hiving and hoarding is no more than a bee or an ant—a better kind of animal than peacock or gamecock, but nothing but an animal." The man whose chief purpose in living is to swill his stomach with alcohol is fitly named "a hog." It is significant in this connection that a group of scientific men in Paris are making systematic experiments upon pigs with a view of ascertaining the precise action of alcohol upon the processes of digestion, respiration, and secretion. The pig has been chosen for these experiments, it is said, because his digestive apparatus closely resembles in all essential particulars that of man, and also because he is almost the only animal besides man that will consent to be dosed with alcohol, which reminds us that Dr. Holland once said, "There is a good deal of human nature in the pig, or else there is a good deal of pig in human nature."

The latter at least is true. In the Sandwich Islands of former days the women made pets of the pigs and slept with them. Alas! that American women even now make favorites and even husbands

of those who "make hogs of themselves" by living only for the satisfaction of appetite. How much the following sounds like the description of what some human "pigs" call "a good time!" In Grass Valley, Cal., the hogs of a ranch recently drank of the contents of a wine cask which ran out into a pool. An account of the "spree" is given as follows: "Some were frisky and full of play, others belligerent and swaggering around hunting up fights; some maundering around in an imbecile way, walking in corkscrew style and tumbling over the least obstruction that lay in their path, while several of the larger hogs, that had managed to get in the heaviest loads, were incapable of motion." These drunken hogs, on recovering, it is said, solemnly adopted this pledge: "We have always been beasts until this unlucky slip, and we promise ourselves that we will never make *men* of ourselves again." In a school in Illinois, the pastor asked his class, "Why is it that such as Adonijah will not learn from the example of such as Absalom?" The answer from a Norwegian brother was prompt: "You feed hot swill, and every pig is going to burn his own nose and squeal and run; he won't learn nothing." When a printer, setting up an article for a very precise preacher on the fifteenth chapter of Luke, which contains the story of the lost *sheep*, the lost *coin*, and the prodigal *Son*, made the summary of the chapter read, "The sheep, the cow, and the sow," he unconsciously proclaimed the Bible truth that prodigals are self-made beasts.

George William Curtis, in his suggestive book entitled "Prue and I," makes a city full of people, seen through Titbottom's spectacles, which penetrate

all disguises and see things and people as they are, appear as a menagerie of animals.

“ In the world's broad field of battle,
 In the bivouac of life,
 Be not like dumb, driven cattle,
 Be a hero in the strife.”

LONGFELLOW, *Psalm of Life*.

Many faults that were once thought peculiar to men and sometimes deemed “manly” are now known to be a part of our common inheritance with the brutes. A Berlin gorilla pouts and smokes. Hogs, and sparrows, and mice have proved themselves capable of getting drunk. Dogs in Munich sometimes sit with the families to which they belong at the tables in the beer gardens, and drink beer with as much relish as the bipeds around them. That fishes manifest anger, fear, and other passions is insisted on by Rev. S. J. Whitmee, in the Proceedings of the Zoological Society of London. His observations were made in Samoa, where he kept the native fishes in aquaria, and watched their quarrels, which are by no means infrequent among the individuals of the same species, and constantly occur between different species and genera, the signs of anger being obvious, especially, as seen in the movements of the fins and spines. Under the influence of great anger or fear the dorsal fin is raised to its extreme height, and the spines both of the dorsal and anal fins are very prominent. Besides this the scales all over the body are raised, so that the fish looks larger than when its mind is unruffled. These views are in the main confirmed by Dr. Day in the same Proceedings. Even a monkey can “get mad and smash things.” *Scribner's Monthly* described an oriole

belonging to a mostly monogamous tribe who built a double nest and took to himself two wives. A cockatoo who was allowed a bed and roost at one end of a lounge, and had enjoyed it a long time, one day discovered a pet dog occupying the unoccupied end. For one moment he stood irresolute, bristling with indignation; the next his mind was made up. Carefully, silently, he let himself down to the ground; then, with the greatest care to tread softly, he walked underneath the couch. On reaching the other end he leaped on the couch, his feathers spread, and his face full of fury; he uttered a piercing shriek, and the dog was off the couch in a moment, and the cockatoo returned with an important air to his nap at the other end—an animal antitype of many a human quarrel in business, and politics, and “society.” A Brooklyn lady was awakened by a movement under her bed. She thought of thieves immediately; but her husband, upon being awakened, said he guessed the noise must be made by the family dog. He reached his hand down to the floor, and in a moment felt a warm tongue lapping it. Then he went to sleep, and awoke in the morning to find the apartment generally “cleaned out.” The lapping was a clever device of a thief, but the man was indeed an animal; not a dog, but a beast of prey.

How can we subdue the animal in us and save ourselves from further peril? An incident of the woman’s crusade will answer. In a Western city, when a few devoted women were praying on the sidewalk before a saloon, the proprietor, in a fit of anger, set two dogs on the leader of the meeting. With a quiet yet fearless spirit she laid her hands upon their

heads and continued praying, while they crouched at her feet. It was the story of Daniel in the lion's den repeated in the nineteenth century. That man soon gave up the business, and, with his six brothers, embraced Christianity, and that saloon has been used for many years for Gospel meetings. So the animal in us is to be conquered by prayer.

In the battle of the seventh of Romans between the flesh and the spirit within us, through what power shall our animal nature be conquered? "I thank God through Jesus Christ our Lord."

§ 7. Another great practical truth suggested by Darwinism is that *man is bound by the obligation of higher capacity to excel the noblest beasts.*

The Bible representation of the ideal man is the cherub with the face of a man, for reason and religion; the head of a lion, for strength; the wings of an eagle, for swiftness; and the body of an ox, for submission to authority. We should combine in ourselves all that is excellent in animals. When Mr. Gladstone said wearily one day to Lord Houghton, "I am leading a dog's life," the reply was, "Yes, the life of a St. Bernard dog, spent in saving the lives of others."

Evolutionary studies, *in showing us how much we have in common with the beasts, has indirectly shown us how much we must do to excel them.* If a dog or horse does his best, he is worthy of all praise; but if a man does the same and no more, he is justly blamed as false to his birthright, because the *level of his best* is higher. "Man is a perfect animal, but a perfect animal is not a man. To say of one he is a perfect brute is not to compliment him."

“Two creatures started together to cross the Delaware River at Philadelphia. One was a Newfoundland dog, and he was sober and vigilant; the other was a drunken man, and he was as shaky of gait and uncertain of vision as it is the wont of drunken men to be. They came to an open space; the dog would have kept on the ice, like a sensible creature; the man, like a senseless creature, dragged them both into the river. The senseless creature could not save himself; the sensible creature helped to save them both. In its general outline the incident is a familiar one. It is not the first time the lower creature in the scale has proved nobler than the higher; it is, unfortunately, not likely to be the last time. But how ashamed that man must be when that dog looks at him!”

A penniless drunkard was arrested in a New Jersey city, on his way home from a Boston dog show, with three fine dogs in his charge. The dogs were better fitted to care for the man than the man for the dogs; as in another New Jersey city, years ago, the late H. W. Herbert's dog “Sailor” three times rescued from the Passaic River one of Herbert's guests who tried to drown himself in a fit of *delirium tremens*. So when a man mercilessly beats his horse, “the greater brute is often at the butt end of the whip.”

Animals excel man in many physical qualities. His ox is stronger, his horse is swifter, his dog has a keener scent, his cat has more sensitive ears and a more perfect sense of touch, and the very flies have more wonderful eyes—strange facts in the theory of evolution, but suggesting that if a man is to excel animals it must be in *mind* and *soul*.'

What is "*manly*" in distinction from *animal*? Not monogamy, for the lion and eagle are more true to their single wives than many men in this age of divorces. Not brave and tender care of the family. Birds and beasts often show a love strong as death for their mates and little ones. Not only will animals sacrifice their lives to save their mates and little ones, but how often dogs have bravely died in efforts to save their masters or other human beings! In Olean, N. Y., a few years since, when the St. Elmo Hotel took fire at night, the lives of all the guests were saved by the hotel dog, "Heck," who first roused the drunken porter and dragged him into the street and then ran barking through the smoke up the stairs of the hotel, scratching and howling at door after door until all were rescued. Then, when the hotel was wrapped in flame, seeing a frantic mother, who did not know that her child had been brought out, rush toward the building, the dog took it as a sign that some one remained to be saved and dashed into the flames only to die. How ashamed that ought to make a selfish *man*, who is less interested in saving others than his noble dog! Mr. A. E. Brown describes from personal observation the almost uncontrollable grief of a chimpanzee in Philadelphia at the loss of his mate. The affection of oxen who have been driven in pairs is so great that when one dies the survivor often pines, and at last follows his old companion. George Sand was told by the peasant farmers in Berri that when one good beast died they knew they would have to purchase a new pair, as sorrow made the survivor useless. A pair of horses in an English stable, whose box-stalls adjoined each other, were firm friends.

The one who finished his hay first invariably received from the other enough to keep him busy until both lots were consumed. One day one of the horses made its way out of its own loose box, the door of which was unfastened, and found out a bucket of mash which was standing in the entrance of the stable, and taking the opportunity while the coachman was in the loft overhead, he was helping himself freely to its tempting contents. The other horse, who was fastened to his own loose box, caught sight of his friend's proceedings, and neighed loudly, evidently demanding a share for himself; and the servant was astonished to see the horse which was enjoying himself fill his mouth with the mash, and poke his nose through the bars of the loose box for his friend to take it from his mouth. This was done several times. This incident suggests that "horse sense" is not so coarse a thing as is sometimes supposed, and that it is not so appropriate as has been supposed for the selfish to condemn philanthropists as lacking "horse sense." The sons of greed lack not only the spiritual sense which every man should have as his badge of superiority to beasts; they even lack the "horse sense" of which they boast, if we measure them by the horse just described. A farmer who had heard a sermon on the text "The ox knoweth his owner, and the ass his master's crib, but Israel doth not know; my people doth not consider" (Isa. 1 : 3), went out to feed his oxen, when one of them licked his arm, apparently thankful for his care. He burst into tears, saying, "Yes, it is all true. This poor dumb brute has more gratitude than I ever rendered to God." And by the ox he was led to Christ.

Nor is pity for the sufferings of others and generosity in relieving them a quality above what is shown by noble animals. There are many well-authenticated stories of orphan beasts or birds nourished by those unrelated to them with a charity which does not *end* "at home." The Virginia City *Enterprise*, of Nevada, relates the following story :

"In this city notice was recently made of a robin that went to a house to feed one of its young that some boys had carried off and placed in a cage that was allowed to hang out of doors. Thomas Prince, who resides on Carson River, above Dayton, tells of a circumstance still more singular. He says a pair of robins had their nest on a fence near his house, while in a bush near by a pair of catbirds had built their nest. The two pairs of birds hatched out their young about the same time, and all went well for several days. Then the catbirds were seen no more, probably having been shot by some of the bee-keepers of Dayton. The young catbirds were evidently starving. When the robins came with a worm or other insect for their young, they always alighted on the top rail of the fence before hopping down to their nest. Each time when a robin so came the catbirds opened their mouths, thrust up their heads, and made a great outcry. They were begging to the best of their ability for food. The robins appeared to understand the appeal, and began feeding the hungry little catbirds. They did not do what they had undertaken by halves. Each evening the female robin sat on her own nest and warmed with her body her own young, while the male robin took to the nest of the catbirds. In this way both broods were reared, the little orphans growing up as strong

and lively as though they had been cared for all through by their own parents. When both broods were able to fly, the young robins and catbirds all flocked together for a while."

Rev. Dr. H. M. Scudder once told of a well-fed cat who brought a half-starved one to share her breakfast; and when the master, to test her benevolence, increased her allowance more and more, she continued to bring other hungry neighbors until she had quite a "free breakfast" and "diet dispensary." Professor Niles matches this story with one of a well-fed dog who daily buried the bones which he did not need and regularly brought a hungry neighbor to enjoy them.

Bees are æsthetic, as Sir John Lubbock has shown, in that they manifest a distinct preference for blue and red, as if to remind young ladies that doting on pretty colors is "small business," which should have but a small share of their time. In an article in *Harper's Magazine* on "The Decorative Sentiment in Birds," it is said that "a love of the beautiful is a distinctly marked characteristic of most members of the feathered family"—a remark which those human beings would do well to ponder who have no higher quality of soul than love of art and beauty.

Animals not only resemble men in generous emotions, but also in what Asa Gray calls "the elements of thought."

Birds obviously do a great deal in the way of instruction. An American naturalist, Mr. Clarke, has lately restated the facts about the musical education of birds. It appears from Mr. Clarke's notes that birds do not, any more than men, inherit instinctive vocal utterance. The young bird only inherits the poten-

tial gift of song. He learns "after long practice, by constantly hearing the song of his elders, the melody peculiar to that species, which is in turn similarly transmitted to the next generation." So far, however, is the "concerted activity" from being inherited in full working order that "the loss of a parent at a critical moment will compel a young bird to study from other birds, perhaps of different species." This is the old theory of Mr. Daines Barrington, who himself possessed sky-larks, wood-larks, and tit-larks that had educated linnets. The young linnets sang, not like their parents, but like their tutors.

Darwin tells us of an ape that was able to rise and fall the scale. Mrs. Joseph Cook speaks of weaver birds in India who anticipated man in the use of electric lights by fastening up fireflies in their nests. And how wonderful the sagacity and reasoning of some animals, and also of birds, reptiles, and fishes! An observer of birds tells the following story of "A Humming Bird's Umbrella:" "When the first drops fell she came and took in her bill one of the two or three large leaves growing close to the nest, and laid it over so that it completely covered the nest; then she flew away. On looking at the leaf we found a hole in it, and in the side of the nest was a small stick that the leaf was fastened to or hooked on. After the storm was over the old bird came back and unhooked the leaf, and the nest was perfectly dry." An English writer tells the following story: "Among the members of a certain family was an old lady who was somewhat afraid of the dog belonging to the household. She was very fond of a particularly comfortable chair, but frequently found the dog in possession of her favorite

seat. Being timid about driving him off, she would go to the window and call 'Cats!' Of course the dog would rush to the window and bark, and the lady would secure her seat. One day the dog entered the room, and finding the chair occupied, he ran to the window and barked furiously. The old lady went to see what caused the excitement, and instantly the dog darted into the chair which she vacated."

Mr. Darwin has shown, in his book on the "Expression of Emotions in Men and Animals," that there are germs of intellectual if not moral faculties in the animal creation. But he has not shown that any animals have the power of intelligent speech, or germs of spiritual life, or capacity for progress as species. Mr. Hornady, in his new book on India, remarks: "We will not say anything about the place the orang has in the long chain of evolution; but while abstract argument leads hither and thither, according as this or that writer is most ably gifted for the same, there is still one argument or influence to which every true naturalist is amenable, and which no one will ignore who has studied from nature any group of typical forms. Let such a one (if, indeed, one exists to-day) who is prejudiced against the Darwinian views go to Borneo; let him there watch from day to day this strangely human form in all its various phases of existence; let him see the orang climb, walk, build its nest, eat, drink, and fight like a human rough; let him see the female suckle her young, and carry it astride her hip, precisely as do the cooley women of Hindustan; let him witness their human-like emotions of affection, satisfaction, pain, and rage—let him see all this, and then he may feel how much more potent has been this lesson

than all he has read in pages of abstract ratiocination." But all this will not convince the naturalist who notes that the orang is not capable of self-improvement as a race, and cannot be taught either intelligent speech or worship.

There is no human tribe without intelligent speech and some form of worship, none without capacity for Christianity and self-improvement; while, on the other hand, there is no animal which worships, nor is there any species of animals capable of intelligent speech or of self-improvement. Lions are the same in every age. The human species alone is capable of self-advancement.

Almost everything else which we praise—monogamy, affection, courage, self-sacrifice, pity, generosity, gratitude, sagacity—man possesses in common with the noblest animals; but nowhere among animals is there self-improvement or intelligent speech or the slightest hint of *worship*—that is, faith in the invisible God and the invisible world, which is nowhere absent from the tribes of men.

HE WHO DOES NOT WORSHIP GOD, HOWEVER NOBLE IN OTHER RESPECTS, IS LIVING A LIFE BUT LITTLE HIGHER THAN THE NOBLEST ANIMALS. AT MOST HE ONLY BELONGS TO "THE ARISTOCRACY OF ANIMALISM." WE SHOULD EMULATE THE NOBLEST BEASTS IN COURAGE, AFFECTION, AND FIDELITY, BUT WE OUGHT ALSO TO EXCEL THEM, BY EXERCISING OUR BIRTHRIGHT PRIVILEGE OF PRAYERFUL COMMUNION WITH GOD. "MEN OUGHT ALWAYS TO PRAY."

"For what are men better than sheep or goats
That nourish a blind life within the brain,
If, knowing God, they lift not hands of prayer,
Both for themselves and those who call them friend!
For so the whole round earth is every way
Bound by gold chains about the feet of God."

TENNYSON, *Idyls of the King*.

IV.

CHRISTIANITY A SCIENCE, NOT A DREAM.

§ 8. THE topic of this lecture was suggested by the following words in a letter from a candid skeptic: "I was born and brought up in a family connected with the Orthodox Church. My wife, too, is a member of it, and I go with her on Sundays. I do it more from habit than because I get any good. It would be a real comfort to me if I could believe what she believes. But I cannot do it because I want to; I can only believe what seems to me true, and it does not seem to me that the orthodox ideas of religion have much foundation. There is too much of fancy and imagination about them, instead of substantial facts. God and heaven, especially God living on earth in the flesh, seems to me like beautiful dreams."

We answer, *Christianity is a science, not a dream.*

What, then, is science? Professor Youmans, one of its chief priests, when editor of the *Popular Science Monthly*, gave this definition: "Science is exact knowledge, obtained by demonstration, observation, or experiment."

This definition ought to be kept ever in mind, for nothing is more frequently counterfeited than the word "science." Since the days when the Bible was written, there has always been "science, falsely so called." Much that is called science is not exact knowledge, but only partial knowledge—that is,

“disturbed ignorance.” In our National Treasury at Washington, numerous clerks count the torn and worn-out greenbacks that have been forwarded for redemption. The clerks become so expert that they can detect a counterfeit by a glance or touch, and when one is found, it is at once thrown out and deducted from the account of the sender. So in reading and hearing statements about scientific matters, one should be ever on the watch for the “counterfeits” that abound—the plausible speculations and unproved hypotheses that may have been falsely passed off as “science.” Hypotheses are legitimate tools by which to construct and test science, but they are no more to be called “science” than the presses that print our greenbacks are to be called “currency.” It should also be noted here that as the clerks who count and examine the currency do not need to be paper-makers or printers or engravers in order to detect counterfeits, so one need not be a scientist to know whether a scientific statement is *logical* or not—whether its facts are well attested and its conclusions logical.

A certain man looked over his commercial paper and divided it into three bunches, marked “B” for bad, “D” for doubtful, and “G” for good—an excellent system for books as well as banks, that no “bad” or “doubtful” speculations may be counted in our “assets” of scientific knowledge. Christianity asks no exemption from the tests of counterfeit truth. It demands them. It commands them: “Prove” [that is, *test*] “all things: hold fast that which is good.” Are the *facts* of Christianity well attested? Do its conclusions necessarily follow? Is the “paper” of Christianity “B” or “D” or “G”?

We answer again, *Christianity is a science, not a dream, since it consists, in its essentials, of proved knowledge, established, in part, like law and history, upon abundant and reliable testimony; established, in part, like the scientific certainties of gravitation and the roundness of the earth, upon a proved hypothesis which is found to be alone inclusive of all the facts and consistent with all; established, in part, like chemistry and medicine, upon repeated and thorough experiments.*

I. As to the evidences of Christianity in the line of *testimony*, it is well known that the great jurist, Sir Matthew Hale, declared that the evidence on which Christianity bases its claims is such as would be deemed competent in any court of justice. More recently, Greenleaf, the standard authority among English-speaking lawyers on questions of evidence, in his great work on "The Testimony of the Four Evangelists," after testing the Gospels as he would test documentary evidence offered in a court, declares that they are sufficient to establish as historic the facts which they allege in regard to Christ and the origin of Christianity.

Not only the historic but also the *experimental* elements of Christianity are established upon abundant testimony. No crime was ever better attested than its opposite and preventive—conversion. A lawyer found himself one night in a meeting for Christian testimony. The subject was Conversion. To the fact of it as a personal experience, testimony was given by a score of his friends and neighbors, learned and unlearned, many of them persons whose honesty and good sense he had learned to respect, the very kind of witnesses he liked to have on his side when trying a case in court. They all declared, in vary-

ing terms, that in answer to a penitent, trusting appeal to Christ, a radical change had occurred in their springs of life. Their tastes as to associates, songs, books, amusements, had been changed; also their consolations, aims, activities, habits. He said to himself: "If any two of these men should testify that I had committed murder I should be hung. Shall I reject all this evidence?" He made the only answer that an honest man can make without self-condemnation. The conclusive testimony demanded a decisive verdict. He pronounced himself "Guilty," and appealed to Christ for pardon.

§ 9. But the evidences of Christianity in the line of testimony have been so often and so strongly presented, that I pass at once into a new field of Christian evidences, that of *proved hypotheses*, through which many of the most unquestioned truths have been received into the hall of science—for instance, gravitation and the roundness and revolution of the earth—to show that, like these, Christianity is scientific because it presents a system that includes all of the facts involved and harmonizes all the facts.

How do we know that the earth is round? We never saw its roundness—nor felt it. To the senses it seems both flat and firm. But long ago men noticed that a ship coming in from sea showed to those on the land, first its rigging, and then its hull. This and other facts suggested that the earth might be round. The guess or hypothesis was tested and found to include and harmonize all the facts involved, and so became, by an accumulation of probabilities, a scientific certainty. Today we know that the earth is round so surely that the rantings of the ignorant

Richmond preacher against this doctrine of science do not disturb us. Nor should the rantings of Ingersollism disturb our convictions that Christ is the Son of God, and the Bible the Word of God, both of which can be proved as conclusively as the roundness and rotation of the earth and by the same scientific method.

So gravitation was at first a guess and became a certainty by being proved to include and harmonize all the essential facts involved.

One may reach moral certainty in regard to God as well as in regard to gravitation by an accumulation of probabilities. Gladstone, in his famous paper on "Probability as the Guide to Conduct," by the very title, which is all one needs to read to catch his argument, suggests that in the matters of home and business men are guided not by certainties but by probabilities. Fathers provide food and raiment for coming days, not because there is a certainty that they and theirs will live to need them, but because there is a probability of it. The farmer sows because of the probability that his harvest will not be snatched away by drought or pest. By the same sensible principle, if a man deems it more probable that Christianity is true than false, he is bound at least to test it, that probability may be changed to certainty by experiment. It is playing the quack on one's self to insist that every claim of Christianity shall be proved as mathematically as that two and two make four, when in almost everything probability is the guide to conduct.

Our problem at this point, then, is, whether Christianity is not probably true in its essential claims as to history and experience.

We are strongly assured by one of the chief priests of science that there is nothing unscientific or self-contradictory or inconsistent in the main theory of Christianity. Professor Tyndall, in the *Popular Science Monthly*, says : “ The theory that the system of nature is under the control of a Being who changes phenomena in compliance with the prayers of men, is, in my opinion, a perfectly legitimate one. It is a matter of experience that an earthly father, who is at the same time both wise and tender, listens to the requests of his children, and, if they do not ask amiss, takes pleasure in granting their requests. We know also that this compliance extends to the alteration, within certain limits, of the current of events on earth. With this suggestion offered by our experience, it is no departure from scientific method to place behind natural phenomena a universal Father, who, in answer to the prayers of his children, alters the current of those phenomena. But, without *verification*, a theoretic conception is a mere figment of the intellect.”

There is, then, no difficulty in the Christian *theory* of the universe, but only in the *verification* of the theory. Matthew Arnold, in the preface of his work on “ Literature and Dogma,” with as cool a dogmatism as if he were an infallible pope over all knowledge, utters the “ dogma” that the theory of a personal and intelligent First Cause is untenable, because it can never be *verified*. But it *can* be verified, and all the other essential facts of Christianity, in exactly the same way as the facts of optics, astronomy, and many other theories of Science which Mr. Arnold and Professor Tyndall fully accepted, *by*

showing that this theory alone includes and is consistent with all the facts.

There is a problem of far higher importance than anything in optics or astronomy to which I shall apply this scientific method. It is well stated in the following extracts from the letters of an old school-mate: "Death has taken my father, mother, and sisters away since those days of early friendship with you, and my life is mostly made up of this wearisome repetition of commonplaces. I wonder sometimes what all this glittering, shiny pageant, which we call life, may mean; what is the key to it all? How shall I find the meaning of this ever-recurring I, and all its relations to the infinite universe about me?"

Mr. Huxley expresses the problem in these earnest words: "The question of questions for mankind—the problem which underlies all others, and is more interesting than any other—is the ascertainment of the place which *man* occupies in nature, and of his relation to the universe of things." Many a thoughtful man has felt that life is an island on which he has been left in sleep, with no land in sight as he looks behind him, no land in sight as he looks forward, and no human voice about him able to answer the questions, "Whence came I? What am I? Whither am I going?"

How can he solve this problem of highest moment? What is "the meaning of this ever-recurring I, and all its relations to the infinite universe about us?"

The answer must be a theory that includes all the facts involved and is at the same time consistent with them all.

Let it be remembered that there are mental and moral facts as well as physical ones, heart facts as well as "hard facts." Every man's common sense tells him that the word he hears is no more a fact than the unheard *thought* that prompted it ; that the clock he sees is no more a fact than *time*, which he cannot see ; that the hot stove which he has felt is no more a fact than the idea of *cause* which the pain awakened in his mind. The Sermon on the Mount is as much a fact as a labeled bug, or a stuffed monkey, or an idiot's brain. Any theory of the universe which does not include all the facts involved, mental and moral as well as physical, and does not prove itself consistent with them all, is, by the very laws of science, unworthy of acceptance.

First, notice the answer which atheists make to the anxious inquiry of the human soul. By atheism I mean what the word literally means, any theory that is *without God*, that leaves God out, whether by denying him or ignoring him. I am aware that it is now the fashion to call atheism "agnosticism," which is usually nothing else but atheism under a less malodorous name. When agnosticism is not atheism it is his lazy brother. It takes energy and courage to defend a positive denial of God. It is easier to sit on the fence. Those who are too lazy or too timid to deny the existence of God have borrowed the trick of sharpers in the courts, and say to all religious questions, "I don't know." No one has any right to say that of any important matter until he has *earnestly tried to know*. I do not count as agnostics those who, like Thomas, are seeking to know what is truth.

Atheism gives an answer to the problem of man's

relation to the universe as superficial as the Ptolemaic answer to the problem of the earth's relations. Ptolemy, judging by the mere appearance of things to the senses, considered the earth as the greatest body in the universe, the stable center of all things, and took no account whatever of the unseen force of gravitation. So the atheist, looking only at the seen and temporal, makes *man* the highest being in the universe, and selfishness the highest motive, and takes no account whatever of the unseen spiritual forces at work in the world, such as Providence and prayer and self-sacrifice.

These godless theories in regard to man and his relations to the universe are not scientific; first, because they ignore a large proportion of the facts. Tyndall, in his famous Belfast Address, confessed that there was a class of facts which his materialism had not included in its theories—"The unquenchable claims of man's emotional nature." The human race will never be satisfied with any answer to its grandest problem, any theory of the universe and its relations to man, which does not include and is not consistent with this class of facts, which are as universal as humanity, and as deep as human thought—"The unquenchable claims of man's emotional nature."¹

The theories of atheism also fail to include or ex-

¹ Since the above was written, Benjamin Kidd, in his book on "Social Evolution," which discusses both evolution and political economy, has shown how specialists in both of those studies have cast aside scientific method when they have ignored Christianity, which is clearly the highest product of evolution. More recently President Schurman, of Cornell University, and Professor N. S. Shaler, of Harvard University, in articles already referred to, have emphasized the same truth, and whatever view of evolution one holds, "the essentials of the Christian religion" are unquestionably its highest development, "the greatest thing in the world."

plain the fact that thoughts of immortality have a place in every human mind, either as a faith, a tradition, or a question.

Especially must a satisfactory theory of the universe explain the origin of matter, life, and mind.² But atheism offers no explanation. Tyndall and Pasteur speak for the world of science when they deny that there is the slightest evidence of "spontaneous generation," or of life except as "an emanation of antecedent life." Huxley long since admitted that his "bathydius" protoplasm, which he hoped would prove to be the jelly-mother of all life, is only inorganic gypsum—the same material as the Cardiff Giant hoax. Atheism leaves us no way to get an existence. And yet we exist. No fact is more *vital* in a theory of the universe than *life*, and no theory that fails to explain such a fact is scientifically satisfactory.

The theories of atheism are unscientific because, second, they are inconsistent with many facts. Five expressions distinguish man as man everywhere. He can say, "I am," "I can," "I ought," "I will," "I pray." As being corresponds to the words "I am," and power to "I can," and conscience to "I ought," and freedom of choice to the words "I will," so God must correspond to the words "I pray," by the very laws of science, which allow in

² Mr. A. R. Wallace, who is a co-discoverer with Mr. Darwin and an equal authority with him, insists that in the development of the organic world there are at least three distinct stages where we must of necessity admit that some new force has come into action—one, the change from inorganic to organic matter; a second, the transition from the vegetable to the animal kingdom, and the third, the existence of the faculties which distinguish man from the brutes. These stages of progress, Wallace declares, "point clearly to an unseen universe, to a world of spirit to which the world of matter is altogether subordinate."

nature no universal instinct without an adequate answer, no half-hinges. The theory of atheism is also inconsistent with the scientific fact that in universal experience, plan, adaptation, purpose, law, order, progress, are found to be the result of personality and intelligence. Nor is the theory of atheism consistent with the facts of present experience in ascribing to matter "the power and potency of every form of life." The fairy stories that make flowers talk, and magic axes cut down whole forests with no hand to wield them; and the mythologies of heathenism that tell of matter in images of wood and stone thinking and acting as gods, are not one whit less scientific than the theories of atheism that make the hot and lifeless atoms of primeval fog, the builders of the present world of matter and mind.

It is scientifically certain, then, that the theories of the universe which deny or ignore God have not sufficient credentials to take their contested seats in the congress of science, since they neither include nor harmonize all the facts involved.

The problem of the "ever-recurring I, in its relations to the universe," is answered but little better by un-Christian theism. No hypothesis of the universe, even though it recognizes the existence of God, that does not include and harmonize the four large groups of well-attested facts in regard to Providence and prayer, the Bible and Christ, can be considered a scientific theory of man and his relations.

From these theories that fail to answer the problem of the universe, we turn to one that succeeds. As gravitation included and explained all the essen-

tial facts in regard to the movements of the heavenly bodies, so Christianity alone offers a theory of man's relations that includes and explains all the facts involved. In the words of Napoleon, "The Bible contains a complete series of facts and of historical men to explain time and eternity." No other theory tells us how the world of nature began, or how it will end. No other theory explains the evidences of a controlling mind in the order and progress of nature and history. No other theory gives a reasonable explanation of the fact that a poor, uneducated carpenter of Nazareth, who died as a malefactor almost 1900 years ago, is the best known, the most beloved, the most obeyed of any being that ever lived in flesh. No other theory explains why the Bible alone of ancient books is the book of the people to-day, the King-Book in the literature of power.

In the Palace of Justice at Rome, they take the traveler into a chamber with strangely painted frescoes on the ceiling and around the walls, and strange mosaics upon the floor. He cannot reduce them to harmony. It is all a bewildering maze. But there is one spot upon the floor of that room, standing upon which everything falls into symmetry. He can see at that point, and that only, the design of the artist and the beauty of his work. So the world seems a chaos of sorrow and sin from every point except one. From any other standpoint life is *not* worth living. But when one stands beside the Cross, with the Bible in hand, he can see that through all the convulsions of nature and history

" One eternal purpose runs,
And the thoughts of God are ripening
With the progress of the suns."

§ 10. The evidences of Christianity in the line of testimony and proved hypothesis are sufficient at least to show that Christianity is more probably true than false. That is all that one who is daily making probability his guide to conduct has a right to ask as a reason for going forward to the third and most conclusive department of Christian evidence, that of experiment, in which probability is changed to certainty. We have seen that the religion of Christ, when it is compared with history and law and other departments of science that are based on *testimony*, vindicates its right to be also considered a part of science, by showing abundant and reliable testimony as the basis of its claims. We have also seen that Christianity, when it is compared with any department of science which is based on a *proved hypothesis*, again establishes its claim to be counted a part of science by presenting a theory of the universe that includes, explains, and harmonizes all the facts involved.

Comparing Christianity with those branches of science, such as chemistry and medicine, that are chiefly based on careful, thorough and repeated *experiments and tests*, we shall see that by the proof of tests and experiments also, Christianity is a science, not a dream. Science ascertained thus by personal experiments is considered somewhat more certain than that which comes from reliable testimony or proved hypotheses. Absolutely certain knowledge in this matter of religion can only be secured by adding to reliable testimony and proved hypotheses a personal experience of the reality of conversion and the power of prayer. The most important elements

of Christianity are not theories but experience, and therefore the final test of it must be a personal experiment of its power. Error can debate, but truth alone can bear tests and experiments. Reasoning is a long route to conclusions, that even then are not absolutely certain. Experiment is the short cut to truth, and much the surest path when the object can thus be reached. Hence the religion of Christ has grown by the condensed logic of tests or "experience" more than by spoken arguments. It is to this department of evidence especially that the command applies, "Prove all things," which does not mean that we are to *argue* about everything, but rather, "*Test* all things." Experience comes from *experior*, meaning to make trial of, to put to the test. Some one asked Coleridge if he could prove the truth of Christianity. "Yes," said he, "*try* it." Philip's answer to Nathaniel's doubt whether the Messiah could come out of Nazareth was almost as brief—"Come and see." He might have argued that Christ was not originally of Nazareth but of Bethlehem, but some new difficulty would then have arisen, and hours or days or perhaps weeks would have been lost in debates. He led his friend rather along the short cut of experiment. A moment with Christ cured Nathaniel's doubts, and he exclaimed, "Thou art the Son of God, thou art the King of Israel."

If a scientific professor should say to his class that he could change a bottle of a certain black liquid into snowy whiteness by pouring into it a scarlet fluid, and a score of witnesses should corroborate his testimony, his hearers might believe it. This belief might be strengthened if he could philosophize clearly on the characteristics and relations of the two

liquids. But they would more quickly reach certainty by taking the two bottles into their own hands, to prevent any chance of jugglery, and performing the experiment for themselves.³ So in the Divine chemistry of conversion, one reaches the certainty that the black heart of sin may be changed by the blood of Christ into the snowy whiteness of purity and joy, when to Christian testimony and Christian philosophy he adds personal experience. If Christianity is a matter of such moment as to be worthy of volumes of reasoning ; if it involves issues of life and death, of happiness and misery ; if its truth or falseness is an important matter for each individual to decide, as the world's wisest men have generally believed, then surely, it ought to be fully *tested* by every rational being who has heard of its claims.

If there is a God personally interested in man, it would be natural for him to give a written revelation of his will for all the ages. How can one know that the Bible is such a revelation ? By doing God's will as there asserted. An aged Christian had a great many passages in her Bible marked " T " and " P. " She was asked what these letters signified. She said they marked the promises of God that she herself had *tried and proved*. Here, then, is a method of testing the Bible, more direct than by examining its historical and scientific accuracy and the fulfill-

³ To change a black solution to a white one by means of a red solution, take two glasses, each half full of distilled or very clear water, and add to one the following : Thio-sulphate of soda, 5 grains ; tincture of nut gall, 10 drops ; tincture chloride of iron, 5 drops. This will form a black solution. If not quite black enough, add a little more tincture chloride of iron. In the second glass place the following : hydrochloric acid, 15 drops ; permanganate of potash, $\frac{1}{2}$ grain. This forms a purple red solution, suggesting royal blood. Pour the red solution into the black one, and all the color will disappear, leaving the water as clear as at first.

ment of its prophecies. Many of the promises of God are personal prophecies whose truth can be readily tested. It is fair, then, to make this challenge to the skeptic : Live according to the precepts of the Bible for a year, and observe whether such living tends to make you nobler and happier, or baser and more miserable. Thus you may surely know by its fruits whether it is truth or deception.

If there is a God personally interested in us, there would naturally be provided not only a written revelation of his will but also a means of daily communication between him and our hearts, for the expression of adoration, penitence, praise, petition, and self-surrender, the five elements of prayer. In the words of Joseph Cook we may therefore say to the skeptic : " I don't ask whether you believe what I believe. You believe something. There are a few religious propositions which appear to you to be incontrovertible. *Will you take these and submit to them in your places of business, in your places of secret temptation, in your family, in your thoughts, in your imagination?* Will you yield gladly to your conscience as illuminated by the best you know of God's Word and works. **WILL YOU TAKE ALL THE LIGHT YOU HAVE AND SURRENDER TO IT,** and all the other light you get by self-surrender—the most vital part of prayer? If so, you will have probably new views of prayer before tomorrow morning."

An infidel physician in Pennsylvania, who had been startled into unusual thoughtfulness by the sudden death of a friend, resolved to give the question of prayer a fair, full personal test. As he read the Bible for light, the words of James especially impressed him, " If any of you lack wisdom, let him

ask of God that giveth to all men liberally and upbraideth not." He knelt down to pray in the solitude of his own chamber, and by an earnest and honest test found that prayer, at which he had formerly sneered, was indeed a power in the universe, and especially in his soul. By experiment he had exchanged a tormenting "perhaps" for an assuring "verily." He became the eloquent Bishop Thompson, of the Methodist Church.

Only a few centuries ago the scholarship of Europe doubted the very existence of this continent. It was thought to be a mere dream of Columbus. But Columbus had testimony of mariners driven by storms far to the West, who had seen land birds and fresh branches. The only theory that would include and harmonize these facts was the theory of another continent. The probability thus suggested was at last by experiment changed to certainty. Long after America's existence had been proved, the possibility of receiving anything from it, or sending anything to it by steamboats, was doubted by many learned men. "Is there a Western continent?" "Can steamers carry messages to it, and bring back answers and goods?" These questions were both answered affirmatively, after much useless argument, by experiment.

"Is there a God in Heaven?" "Can we hold intercourse with him by Bible reading and prayer?" These questions, to which skeptics sneer back their theoretic "No," multitudes of Christians have answered for themselves, by experiment, as all others might do, with a mighty "YES."

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WITH SUPPLEMENTAL NOTES AND APPENDIXES

BY

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*Superintendent National Bureau of Reforms,
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SAVE MAN

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VOTE

ME

WE

INTRODUCTION.



REV. WILBUR F. CRAFTS, PH. D.

MUCH of what the author says in this book is of the nature of expert testimony, the value of which is enhanced by the history of the witness. He is wont to say that he was born a twin of the Maine law, in the same State, in the same year, and almost of the same father. Mr. Crafts' father, a preacher, was the writer of one of the rallying songs of Neal Dow's first campaign, and also a fearless opponent of slavery, notwithstanding the withdrawal of support by proslavery parishioners. Our author was, therefore, a reformer born, rich in an inheritance of moral heroism received through heredity and early training and the environment of a State in which, in all his childhood, he saw neither saloon nor drunkard.

When politics first came into our author's life as an influence, in the days of Fremont and John Brown, national issues were not questions of commerce but of conscience. The conquering elements of politics then boldly avowed allegiance to the Decalogue and the Golden Rule. It was felt by the most efficient reformers to be a momentous truth that man can neither make nor break law—though it may break him. He can only translate the one supreme law into its applications to current affairs.

Our author's first temperance lecture was delivered at fifteen, when he was a sophomore in college and already an active member of temperance societies. At seventeen, he preached his first sermon from a text that has proved to be the key-note of his practical ministry, "Faith without works is dead." In his earlier pastorates, Mr. Crafts' unusual success in his own Sunday-school led to his being often called to write and speak as a specialist on Sunday-school work, in connection with Dr. (now Bishop) J. H. Vincent and others. It was thus, in writing *Through the Eye to the Heart*, his first book, as joint author with Miss Sara J. Timanus, that he came to form with her a "Sunday-school Union" for life. By both voice and pen, Mrs. Crafts has herself done a remarkable work for

AUTHOR'S INTRODUCTION.

ALL reforms are relations. So are vices. Although specialists are more needed than ever before, one-idea reforms belong to the individualistic ages of the past. Steam and electricity have socialized the world. Vices quickly recognized this sign of the times, and became "liberty leagues." Reforms more slowly formed "unions."

Too much is commonly claimed by the one-idea reformer for his pet reform. Social ills cannot all be remedied by a single cure-all, nor by a single doctor, not even by the one whose sign we saw in a Kansas hotel, "Specialist in all chronic diseases." Small and Vincent's *Introduction to the Study of Society* (p. 74) bids us remember that "social improvement thus far has been by cooperation of many ameliorative forces," a historical basis for the numerous reform movements which have of late adopted what foreign critics of the W. C. T. U. call "the do-everything policy."

"It is well," says *The Interior*, "that ideas of moral reform have broadened out. They have for an age and a half been limited to temperance. By broadening the platform and making temperance only a plank in it, temperance is greatly strengthened. The gambling den, social purity, political and civil morality—each one of these brings its special advocates into a common cause, and gives to each line of reform the united strength of the active forces of all lines. There is no danger that they will fail to combine against the saloon—which antagonizes equally the progress of any and every moral reform."

The forty departments of the W. C. T. U. include the ripest one-fourth of current reforms. The King's Daughters are another "do-everything" society. The Endeavor good citizenship movement, the programs of the Evangelical Alliance conferences, the institutional churches, the university settlements, all aim at many reforms, not one only.

Individuals who enter upon practical study of any one reform usually find themselves led into another and another. Miss Willard starts out to study temperance, and becomes also the special advocate of labor, of purity, of all Christian reforms; putting more statesmanship in her annual review of public affairs than any Governor or President dares to put into his annual message. So, again, Professor Richard T. Ely starts to study labor, and presently is writing temperance tracts. John Burns and Hon. T. V. Powderly also come to be temperance advocates through labor leadership. Mrs. Josephine Shaw Lowell devotes her great talents to the new science of charity, and presently is the Joan of Arc in the victorious sweaters' strike.

In Chicago and New Orleans working men start out to secure emanci-

PRINCETON LECTURES

ON

PRACTICAL CHRISTIAN SOCIOLOGY.

I. FROM THE STANDPOINT OF THE CHURCH.

§ 1. THE humanitarianism of the Sermon on the Mount was not proclaimed by Christ until the second year of his ministry. It was preceded, in the first Christ's Hu- year, by the sermon on *worship* at Jacob's manitarianism. Well, and that was preceded by the sermon to Nicodemus on *regeneration*, and that was preceded by the proclamation of *atonement* at the very beginning of Christ's ministry in the greeting of John the Baptist, "Behold the Lamb of God, that taketh away the sin of the world." Note Christ's order: atonement, regeneration, worship, humanitarianism. We should neither *begin* with humanitarianism nor *end* with worship.

The Christian development of human individuality is the spinal cord in the history of civilization; but the hour is come for Christian sociology, which is the study of society from a Christian standpoint with a view to its Christianization.¹

§ 2. The heart of Christian sociology is the Kingship of Christ. The individual is saved by his cross, but society is saved by his crown, that is, by Kingship of the application of the law of Christ to all Christ. human associations—to the family, the school, the shop, the Church, the state.

NOTE.—The figures in the text refer to notes in the Appendix.

II. FROM THE STANDPOINT OF THE FAMILY AND EDUCATION.

I. THE FAMILY.

§ 1. PURITY and home, both words without meaning outside of Christian lands,¹ are respectively the root and flower of the family, which is the *primary* social group, in the order both of time and importance. It is the fault of much current sociological discussion, as of current legislation, that it makes more of property than of purity,² more of money than of morals, and so assumes that the shop rather than the home is the sociological point of departure, and that *larger having* rather than *nobler being* is the sociological end. It degrades sociology to make it a mere extension of economics.³

§ 2. But surely there is no need to prove that normal society is an association of families. The opening chapters of Genesis teach not only monotheism but monogamy. Society is there shown to have originated in a holy family. Historically, nations are but families expanded to tribes, headed by a father-king.⁴ One reason why our modern cities are so abnormal morally is that they are abnormal socially, being largely composed of boarders, the fragments of broken families.⁵ Rev. Dr. Charles H. Parkhurst, the most illustrious of municipal reformers, declares that "the sorest spot in our municipal condition—in national also—is the decadence of the home idea." The home has very largely given place to the boarding-house, especially in the case of young men, who so madly rush to the cities at the very age of greatest moral peril. This causes the break



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III. FROM THE STANDPOINT¹ OF CAPITAL AND LABOR.²

§ I. THE message of the Church, when confronted with the problems of poverty in the past, has been, to the poor,³ Patience ; to the rich, Charity. At last, from the standpoint of Christianity, as well as from that of labor, we are learning to write above both words,

JUSTICE.⁴

Here is a point of general agreement, such as should be found as common ground to start upon together in every controversy. That the present industrial system, which in its maturity is not a competitive system but a monopolistic system,⁵ works great injustice to the poor and to the public, and that not in rare exceptions but on a large and increasing scale,⁶ and should therefore be at least modified, will hardly be questioned, however widely even good men may differ as to remedies.

Plato taught that justice is moral health ; injustice, disease. The industrial sickness of the body politic to-day is injustice. Only by justice can it be cured. Only the equitable is practicable.

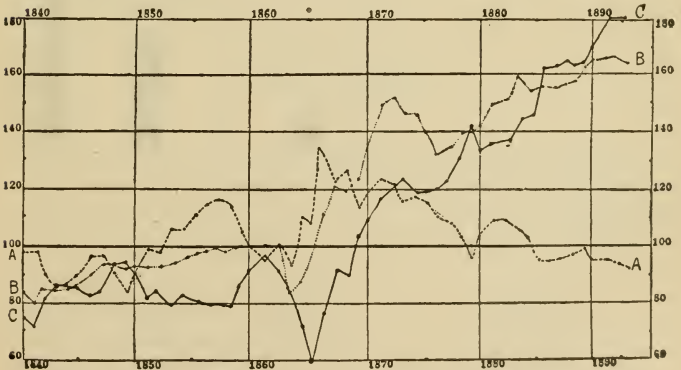
Labor appeals for justice, not for pity. Many preachers ask better wages for labor from compassion, on the basis of that misquotation of Henry George, "The rich are growing richer and the poor are growing poorer."⁷ Labor's real claim is that, of the great increase of wealth caused by modern machinery, labor has not had its fair share.⁸ "The grievance point of view," says the organ of the American Railway Union, "is this: Labor is habitually wronged by the employer and not sufficiently

protected by the state." Workmen will not be silenced by statistics that show they are paid more than formerly,⁹ but, having learned the meaning of justice from Christianity,¹⁰ they will be content only when it is proved that they are getting their fair share of the modern comforts and luxuries they have helped to create.

§ 2. The main contention between labor and capital was most exactly presented in the strike of 1892 at Homestead, four miles from my Pittsburg home at that time. The world's most famous, if not most wealthy manufacturer proposed a slight reduction in the wages of his best paid mechanics, the best paid in the world. They struck, not, as too hasty preachers and politicians and agitators declared, in resistance to "starvation wages," but in defense of the claim that labor already received less than its just share of the joint product of capital and labor, and, as a matter of principle, should not submit to further reductions. These

DIAGRAM SHOWING RELATIVE PRICES, WAGES, AND PURCHASING POWER FROM 1840 TO 1892.

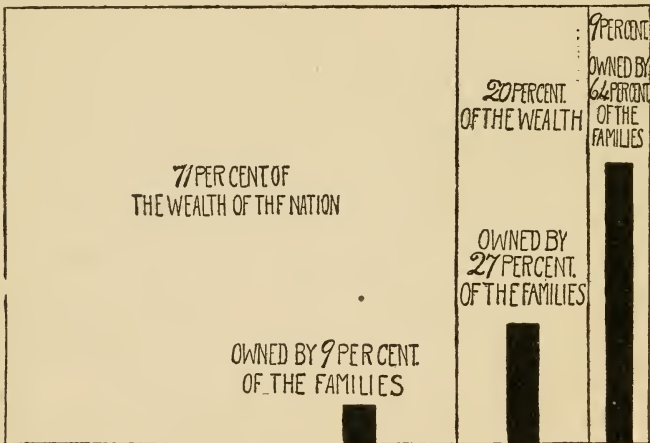
(From *The Voice*, March 7, 1895. Prepared by George B. Waldron, of *The Voice* editorial staff.)



A, Relative prices in gold ; B, relative wages in gold ; C, relative purchasing power of ten hours' labor.

The average ten-hour wages will command to-day, or would in 1892, about three times as much in the comforts and necessities of life (barring rent) as in 1865, and nearly two and one-half times as much as in 1840.

workmen were in not more danger of being pauperized than our Revolutionary fathers would have been if they had paid the small tax on tea. The contest in each case was for rights, not for bread. The reduction affected only 321 men, of whom the highest grade were receiving \$271 per month, which was cut down to \$230, being at the rate of \$2760 per year; while the lowest grade were to receive \$45 per month after the reduction, which is more than some ministerial salaries.¹¹ The strike on the part of the other workmen was a "sympathetic strike." All agreed that even the thousand a year workmen must not be cut down to swell their master's million a year.



Voice Chart, prepared by George B. Waldron, based on an article, "The Concentration of Wealth," by Geo. K. Holmes, U. S. Census Expert, in the *Political Science Quarterly*, December, 1893.

AVERAGE WEALTH OF PEOPLE OF U. S.

1860, \$514.
 1870, \$780.
 1880, \$370.
 1890, \$1000.

Total wealth 1890, \$62,610,000,000.

—U. S. Census Bulletin.

PROPORTION OF PRODUCT RECEIVED BY LABOR IN U. S.

1850, 23 per ct.	} (Great Britain 31.50, about.) (Continental Europe, 30.)
1860, 21.2 "	
1870, 19 "	
1880, 17.8 }	

1850 to 1880 the average product increased 83 per cent.; average wages, 43 per cent.

—Mulhall's History of Prices.

While labor probably gets higher wages in the United States than in Europe, as Mr. Carnegie claims, the disproportion between labor's share and capital's share is here greater than abroad, so that European capitalists in reality make a fairer divide of the joint products.

It is unfortunate for labor's cause that its main contention, that there must be no further reductions in labor's proportion of the joint product of capital and labor, even where wages are highest, but rather increase wherever they are too low, was not fought out in that representative case in lawful agitation. If the war had been one of ballots instead of bullets, there might have been by this time, or in the near future, a victory for the contention that the paternalism of protection should be so adjusted as to include the workman's wage as well as the manufacturer's profit, either by a high tariff on imported labor as well as upon goods, or by some form of arbitration* to which corporations asking the public for the benefits conferred by charters, and receiving tariff protection also, should be required to submit in cases of such serious labor conflicts as would otherwise endanger the public peace or cause a congestion of commerce.

In other strikes also it has usually been the best paid mechanics that have demanded higher wages or resisted

* A concise and comprehensive discussion of arbitration is contained in a pamphlet published by the Civic Federation of Chicago, entitled *Congress of Industrial Conciliation and Arbitration*, which contains the views of most of the specialists of this theme. See also in Appendix, Part Second, the Arbitration Bill passed by the National House of Representatives in 1895. A most valuable series of symposiums was published in *The Voice* during April, 1895, on the long tried and successful plan of conciliation in use among the bricklayers of New York City; a permanent court of arbitration in which employers and employees have peacefully settled all disputes for many years. Just before this book went to press a novel and a radical plan of compulsory arbitration was proposed in the *University Law Review* in these words:

"The next step, we trust, will be to discover that the existing courts of equity are adequate and ready prepared tribunals for this purpose; and a short statute would be ample which should require that the regulations and dealings of every corporation enjoying a franchise from the State or nation shall be just and fair, and that courts of equity shall have jurisdiction to enforce this rule by the ordinary proceedings."

REVIEW QUESTIONS.

§ 1. What has been the message of the Church to rich and poor as to poverty? What new watchword is suggested? On what are all parties to the labor controversy generally agreed? What was Plato's teaching as to justice? What three divisions of the wealth of the nation are given? Is the average wealth increasing or decreasing? Is the average proportion of the produce received by labor increasing or decreasing? How does this proportion compare with the division in Europe? What false plea is often made in behalf of labor? Has the purchasing power of average wages decreased since 1840? What is labor's main contention?

§ 2. Where was this main contention most exactly presented? How was this contention confused and defeated? If the contention were pressed in politics what might be expected in legislation? What grade of workmen most frequently strike? Where are "starvation wages" really found? Is the average workman abjectly poor?

§ 3. What distinction is made between capitalism and capitalists? What capitalists have been labor leaders and labor advocates? Have the concessions to labor made by the privileged classes been achieved chiefly through force and fear? What watchwords for the labor crusade are suggested?

§ 4. What failure of a materialistic labor movement is cited? What political reform was thus promoted? What further safeguard against the bribery of labor voters is needed?

§ 5. In what three departments of industry is justice to be achieved? How can prices and wages be made less unjust? What instance of reducing wages only in hard times is given? In what field is full justice in wages possible?

§ 6. How are the poor wronged in prices?

§ 7. Have poor wages ever been held to justify poor work? What is the right and wise ground for workmen and their unions to take on this matter? What ground has been, and what ground should be, taken as to doing dishonest work on an employer's order? What were the customs of medieval guilds as to skimmed and dishonest work? What criticism has been made on our labor unions for lack of like rules?

§ 8. What is a sympathetic strike? What is stated as to the Chicago strike?

§ 9. What was its main purpose? Why is a labor trust not to be feared? How are labor unions helpful? (Note.)

§ 10. What grounds have we for expecting the final triumph of industrial justice?

§ 11. What is the expectation of the ablest labor leaders of to-day as to the time and method of that triumph? What British and French methods are compared to each other?

§ 12. What form of patience should the poor hold fast? What injunctions of patience may be properly resented? What form of patience is condemned and what impatience palliated?

V. FROM THE STANDPOINT OF CITIZENSHIP.

§ I. "THE powers that be are ordained of God."¹
To a Christian nation that ought not to seem a new doctrine. But when Rev. Dr. W. J. Robinson stood with me in the Pennsylvania House of Representatives in defense of the State Sabbath law, and, with the solemnity of a bishop addressing a group of young ministers, reminded the legislators before him that they were civil ministers "ordained of God," "called" to serve Him and humanity by applying the law of Christ to civil affairs, it was manifestly to many of them, and even to some Christians present, a novel view of politics.

The civil Kingship of Christ is not a mere denominational peculiarity of Covenanters and United Presbyterians. It is nowhere more ably defended than in one of the *Popular Lectures* of the late Professor A. A. Hodge, D. D., of Princeton, whose name, with those of equally illustrious ministers from all the great branches of the Protestant Church, was enrolled among the vice-presidents of the National Reform Association, which was organized under the clouds of war, in 1863, to recall the nation to its loyalty to the law of Christ, whose violation in the case of the slave had brought on us His judgments.²

When a United States Senator declared that "Politics owes no allegiance to the Decalogue and the Golden Rule," the indignant public retired him from politics to prove that the law of Christ had not been so retired. Many who think it unimportant to acknowledge the supremacy of the Divine Law in the national Constitution

1620. The "Pilgrims" landed at Plymouth, Mass. Having first landed on Clark's Island, they remained there over the Sabbath, despite the December cold, rather than undertake the labor of moving to the mainland on that sacred day. This devotion to the Sabbath is now celebrated by an inscribed stone on the island.



ROCK ON CLARK'S ISLAND.

1637. Descartes promulgated his famous philosophy.
1638. Christianity (Roman Catholic) was expelled from Japan because of the alleged political plottings of the Jesuits and other Portuguese missionaries. All Christians were prohibited by proclamation from entering the country, with the threat that, if even the king of Portugal or the God of the Christians should trespass on Japanese soil, he should pay the penalty with his head. Harvard University founded. "Solemn League and Covenant" subscribed in Scotland in reign of Charles I., in resistance to the control of the Church by the State, whence comes the name "Covenanters," whose watchword is "Christ's crown."
- About the middle of this century the first sawmill in England was torn down by woodsawyers, who feared the new invention would destroy their business.
1649. Charles I. executed by order of Parliament. His chaplain, Jeremy Taylor, wrote the famous books, *Holy Living* and *Holy Dying*. Westminster Catechism issued by the Puritan divines.
1653. Cromwell made Lord Protector. Milton, his secretary, was interested in political and moral reform as well as poetry. He

1896, OCTOBER-DECEMBER.—CELEBRATION OF THE COMPLETION OF
NINETEEN CHRISTIAN CENTURIES.

(*Appropriate for 1896 or 1900-1901 A. D.*)

All scholars are agreed that Christ was born a little more than five years before our era, that is, in 5 B. C. The day is not surely known, but the known death of Herod makes it certain that it was some time in the last quarter of that year. The last quarter of 1895 therefore brings us to the nineteen hundredth birthday of Christ in the strict use of the term. Colloquially we say when a child is one year old that is his first birthday. It is really his second. Counting Christ's first birthday, 1895 brings us to the nineteen hundredth birthday of Christ, worthy a whole quarter's celebration; still more the last quarter of 1896, when the twentieth century really begins.

First session, evening, Mass meeting under auspices of Union Preachers' meeting. Selections from oratorio of *The Messiah* by united choirs. Luke's story of the "Christmas Shepherds," recited by a girl; Matthew's story of the "Magi," recited by a boy. Addresses (fifteen minutes each): "How are Christian Churches Superior to Pagan Temples of Greece and Rome?" "How Superior to Heathen Temples of To-day?" "In What Respects are Christian Churches below Christ's Standard?" "By What Forces Can They Be Brought up to It?"

Second session, afternoon, Congress of societies of Christian women, such as W. C. T. U., King's Daughters, etc. Prelude of brief select readings. Addresses, "How are Women Better off in Christian Lands than in Ancient Pagan Lands?" "How Better off than in Heathen Lands of To-day?" "In What Respects are Christian Women Below Christ's Standard?" "By What Forces Can They be Brought up to It?"

Third session, evening, Mass meeting under the auspices of the lay officers of the churches. Addresses: "How is Business in Christian Lands Morally Better than it was in Ancient Pagan Lands?" "How Better than in Heathen Lands of To-day?" "How are the Business Customs of To-day Below Christ's Standard?" "By What Forces Can They be Brought up to It?"

Fourth session, afternoon at close of public schools, Convention of Christian boys' and girls' societies, such as Junior Y. M. C. A., Junior Endeavorers, Junior Epworth Leagues, Loyal Legions, etc. Each society to furnish one brief declamation, or solo, or chorus for introductory service. Addresses: "How are Boys and Girls in Christian Lands Better off than Boys and Girls in Ancient Pagan Lands?" "How Better off than Boys and Girls of the Heathen Lands To-day?" "How

ON THE WHOLE CIRCLE OF CHRISTIAN REFORMS.

Practical Christian Sociology.

By REV. WILBUR F. CRAFTS, Ph. D. 12mo, Illustrated with twenty-two portraits and other illustrations. 524 pp. Price, \$1.50.

Letters on the Lectures, from the Princeton Seminary Faculty.

PRINCETON, February 15, 1895.

MY DEAR MR. CRAFTS:

The Faculty of the Seminary have wished me to express to you their appreciation of the lectures on Social Problems which you delivered to the students last week, and their thanks to you for the course. We recognize the wide study which you have given to these subjects, and the large number of valuable facts which you have collected. We recognize also in your treatment of the facts the caution and the desire to be fair and thorough which are necessary for a proper discussion of such practical and important topics. You seem to us bent on apprehending the whole truth, and in doing justice to all sides of each case. We are especially gratified by your presentation of the idea that religion as well as economic science has a part to do in the solution of social problems, and we believe that our students will be better prepared by your lectures to exert the proper influence in social and civil relations which is possible to ministers of the Gospel. We congratulate you heartily on the ability you showed in the preparation of your lectures, and feel sure that you have done a most useful work in delivering them before the Seminary. Please accept our thanks.

Very sincerely yours,
GEORGE T. PURVES.

PRINCETON, February 18, 1895.

REV. MR. CRAFTS:

DEAR SIR: I wish to say to you how highly I, in common with my colleagues and your auditors generally, appreciated the brief course of lectures which you have delivered at the Seminary on sociology. The practical acquaintance which you manifested with the numerous and complicated questions arising under this theme surprised and delighted me. The wise reserve shown in avoiding hasty and inconsiderate judgments upon matters that require further investigation, and the impartial attitude taken in regard to matters which have led to serious strife and agitation, cannot be too highly commended. And the high-toned Christian principle which marked the entire discussion, without running off into extravagance and excess, inspired confidence in the solution which must thus be ultimately reached. There is but one feeling among us, that of high gratification that we have been permitted to hear these instructive and valuable lectures, and we are greatly obliged to you for consenting to deliver them to our students.

Very truly yours,
W. HENRY GREEN.

WHAT IS SAID OF THE BOOK.

Prof. R. T. Ely, Dean of the School of Economics and Politics, University of Wisconsin: "I am greatly pleased with it. It cannot fail to have a most stimulating and wholesome effect upon the churches."

Prof. Albion W. Small, Head Professor of Sociology in Chicago University: "A decided acquisition to our Sociological literature. I have already recommended it for use in several colleges, to follow up Small and Vincent."

Bishop John H. Vincent, D. D., LL. D.: "This book is literally packed with facts and theories and practical counsels. There is enough wisdom in it to set up a whole millennium."

Frances E. Willard, President National W. C. T. U.: "It is packed with just the information that a 'Christian at Work' most needs to know, and which he might search for through a hundred volumes in vain. . . I wish that it might be studied in all the local unions of the W. C. T. U."

Carroll D. Wright, Commissioner of Labor, Washington, D. C.: "I consider it an exceedingly important and valuable work."

Rev. F. E. Clark, D. D., President of the United Society of Christian Endeavor: "I am much delighted with it. It is popular but scholarly, and treats of the profoundest and liveliest questions of the present day in a way that is sure to be helpful."

Rev. B. Fay Mills, (the well-known Evangelist): "It is exceedingly suggestive and helpful, and has already been of value to me in connection with some of the practical sociological talks that I am delivering these days in connection with my evangelistic work. I find the public ripe for this teaching, and am rejoiced to be able to recommend your book in the highest terms."

The Boston Times: "This is a book to read carefully and quietly, and to preserve for the fund of facts and information which is contained in it."

The Religious Telescope, Dayton, Ohio: "'Practical Christian Sociology,' is one of the latest and best of books on the great social question of the day. Dr. W. F. Crafts, its author, is one of the best of authorities."

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